PART I

ANTI-MICROBIAL ACTIVITY OF

ILAVU VER CHOORANAM

(*Bombax ceiba*)

&

PART II

ANTI-ULCER ACTIVITY OF

"HINGU CHOORANAM"

The dissertation Submitted by

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"Anti – Microbial Activity of *Ilavu Ver Chooranam (Bombax ceiba)* and Anti - ulcer Activity of *Hingu chooranam*"** is a bonafide and genuine research work carried out by me under the guidance of **Prof.Dr.A.Kumar,M.D$_{(s)}$**, Post Graduate Department of Gunapadam, Govt.Siddha Medical College, Arumbakkam, Chennai-106 and the dissertation has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

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This is to certify that the dissertation entitled **"Anti – Microbial Activity of *Ilavu Ver Chooranam (Bombax ceiba)* and Anti - ulcer Activity of *Hingu chooranam* "** is submitted to the Tamilnadu Dr.M.G.R.Medical University in partial fulfillment of the requirements for the award of degree of M.D (Siddha) is the bonafide and genuine research work done by **K.Arivumani** Under my supervision and guidance and the dissertation has not formed the basis for the award of any Degree, Diploma, Associateship, Fellowship or other similar title.

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This is to certify that the dissertation entitled **"Anti – Microbial Activity of *Ilavu Ver Chooranam (Bombax ceiba)*** and **Anti - ulcer Activity of *Hingu chooranam*** is a bonafide work carried out by **K.Arivumani** under the guidance of **Prof.Dr.A.Kumar,M.D$_{(S)}$.**,Head of the Department, Post graduate department of Gunapadam, Govt.Siddha Medical College, Chennai - 106.

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PART – I

ANTI-MICROBIAL ACTIVITY OF ILAVU VER CHOORANAM

1. INTRODUCTION

World's first originated medicine is our traditional siddha system of medicine. This system of medicine was founded by *siddhars*. In the Siddha pharmacopeia, the *Sidddars* have used 4 typs of crud drugs which is crude drugs of plant origin, animal origin, mineral origin and metal origin for preparing medicines. Herbs are extensive used for the preparation of medicine in siddha system of medicine.

"Ver paaru thazhai paaru minjinakkal mella mella

Parpa chenduram paaru" .

Roots, leaves, flowers, fruits, seeds of plants are being used to alleviate the diseases. If the herbal drugs cannot control the severity of the disease, the next step is to use the drugs of mineral & metal origin as *parpam* and *chenduram.* It is the line of treatment in this system.

Roots are rich in phytochemicals. To illustrate the importance of roots, "*Pathartha guna chinthamani*" classified roots as *Dasamoolam* and *panchamoolam.*

The basic theory of siddha system is that the human body is made up of **96 thathuvas**. The human body functions mainly by the three ***uyir thaathus*** (3 Humors) are named under ***mukkutram*** and these are related to ***arusuvaiga*****l (6 Tastes)** and ***pancha boodhangal (5 Basic elements).***

Disease occurs in the human by means of decrease or increase in quantities of *uyir thaathus.*

Siddhars classified the total diseases in human body according to the literature "***Agathiyar rathina churukka naadi"*** as 4448 disease.

Vellai noi is one of the "***Neer rogam***" under these classification. The aetiology,types and clinical features of *vellai noi* are mentioned in "***Yugi chinthamani".***

In modern aspect the *vellai noi* is compared to that of Leucorrhoea. Abnormal vaginal discharge (Leucorrhoea) is quite a frequent complaint of women in day to day life. It could be painful (dragging pain in abdomen, lumbar region pain) cause lot of discomfort (Intense itching, irritability),stress and even affect the sexual life and libido(Obstetrics and Gynecology for post graduates -S.S.Ratnam).

Commonly fungal, parasitic, bacterial and sexually transmitted diseases are the prim causative factors. Other causes are hormonal imbalance, improper lifestyle and surroundings, anemia, diabetes, etc..,

The survey conducted all over the world indicates that 75% of women will have at least one episode of candidal vaginitis during their life time and 40% -50% of women may experience a recurrence(Sobel J.D,1985). 90% of patients caused by candida albicans, trichomonas vaginalis, gardnerella vaginalis (Clayton et al., 1985).

The development of the nation partially depends on the development of the women who constitute half of its population. But woman is more prone to disease regarding her situation to come across various explanatory changes of life like puberty, menstruation, child bearing, lactation and menopause. If woman is healthy, she will give her 'Best' for the health and development of her child, family, society and nation.

So I have decided to choose one of the most common complaints of women "The vaginal discharge" as my dissertation topic "*Vellai noi"*.

Herbal medicine also called as phytomedicine, and it has a long tradition of use. It has a high value in treating and preventing diseases. The WHO estimated that 80% of people worldwide rely on herbal medicine for health care.

Current treatments for leucorrhoea include Metronidazole, Itrconazole, Imidazole, Ecanozole. The advers effect of these drugs are Neuropathy, Epileptiform seizures, Leucopenia, CNS & GI disturbances,Urticaria,Angioedema, Menstural irregularities, Increase in liver enzymes, Dark urine. So I have decided to take the herbal medicine "*Ilavu ver (Bombax ceiba)* since it will be less toxic and will not produce the adverse effects like the modern medicines.

In the siddha literature "***GUNAPADAM – MOOLIGAI VAGUPPU"*** the drug "***Ilavu ver chooranam****"(Bombax ceiba*)is indicated for leucorrhoea. So the drug has been selected for the dissertation work in treating the disease leucorrhoea.

The root of ***Bombax ceiba*** is a modified root for the special function of supporting and it is named as ROOT BUTTRESSES. This tree is widely distributed in tropical regions. It grows in alluvial sand near the banks of rivers and rainfall is well distributed throughout the year.

Since the above said conditions are conducive for the plantation of *bombax ceiba*. So it is widely cultivated in the Theni district which lies in the hilly regions of western ghats. If the plant well growing in this alluvial soil, this root contains rich phytochemicals. Roots are abundant in quantity in root buttresses.

So this root can be used as a cost effective medicine for the treatment of leucorrhoea, which in turn provides curing low economic status women.

Similar to the exploration of the underground gold to ornamental ones, I have decided to use the roots of *Bombax ceiba* in an effective manner to cure the ailment and thereby creating a healthy womanhood.

2. AIM AND OBJECTIVES

AIM:

Herbal medicines also called phytomedicine. It has long tradition of use for long life with better health. The value of herbal medicine in the treating and preventing disease. Root of *Ilavu maram (Bombax ceiba*) are very useful to treat a *vellai noi (* Leucorrhoea) which is mentioned in our literature. It will be less toxic and will not produce the adverse effects for leucorrhoea. Leucorrhoea is one of the most common complaints of women. These roots are abundant in quantity in root buttresses. So this root can be used as a cost effective medicine for the treatment of leucorrhoea, which in turn provides curing even for low economic status women.So I have decided to use the roots of *Bombax ceiba* in an effective manner to cure the ailment and thereby creating a healthy womenhood.

The ultimate aim of my dissertation work is to prove the **ANTI – MICROBIAL ACTIVITY** of ***Ilavu ver chooranam***

OBJECTIVE:

In this dissertation work, the "***ILAVU VER CHOORANAM***" is analyzed to assess the following aspects:

- To collect the literature review
- Get the authentication of the raw drug
- Pharmacognostic study for the raw drug
- Phytochemical and Chemical analysis for the trial drug to identify the active components.
- Pharmacological study to evaluate the anti – microbial activity
- Clinical study to assess the efficacy of the drug through open clinical trial of Leucorrhoea patients.

3. REVIEW OF LITERATURE

3.1. Botanical aspect:

Bentham & Hooker's classification:

Kingdom	-	Plantae
Sub kingdom	-	Tracheabionta
Super division	-	Spermatophyta
Division	-	Magnoliophyta
Class	-	Magnoliopsida
Sub class	-	Dilleniidae
Order	-	Malvales
Family	-	Bambacaceae
Genus	-	Bombax
Species	-	Bombax ceiba

Vernacular names:

English	-	Cotton Tree , Red Silk-cotton Tree
Tamil	-	Ilavam , Ilavu , Mullilavu , Kongu , Pulai
Sanskrit	-	Kantakadruma , Raktapushpa , Bahuvirya , Pichhala ,
Mochani	-	Tuliphala
Hindi	-	Kaantisenbal , Pagun , Rakatsenbal , Semul
Bengal	-	Pagun , Roktosimul , Simul , Tula
Gujarat	-	Sawar , Shimalo , Shimar , Shimul
Kanadam	-	Booruga , Kempubooruga , Mullilavau
Marathi	-	Kantesavar , Saur , Simalo , Tamari
Malayalam	-	Mullilabpoola , Mullilavau , Mocha , Unnamuriku , Purani
Oriya	-	Bouroh , Mochoroso , Salmali , Simuli
Telugu	-	Boorugachettu , Kondabooruga , Mundlaburaga , Pinnaburaga
Combodia	-	Roka
Chinese	-	Mu Mien
Burma	-	Didu , Lepanbin , Letpan
Ceylon	-	Parutti
French	-	Bambax de Malabar , Cotonnier Mapou
Indo China	-	Gao , Sich moc mienthu
Malaya	-	Mook min , Simur

Distribution:

A lofty, deciduous tree buttressed at the base, up to 40m in height and 6m or more in girth, with a clear bole of 24-30m. Widely distributed throughout India, including the Andamans, up to 1,500m or even higher. The trees, in full bloom, present a striking blaze of colour and are grown in avenues. In peninsular India, the tree is very common in the dry as well as moist, mixed deciduous forests; in West Bengal and Assam, it is found in the mixed evergreen forests as well. The tree grows sporadically in the mixed deciduous forests in the sub-Himalayan region and lower valleys, and is typical of the alluvial-savannah-type forests, tending to be gregarious near the riverbanks

Description of the plant:

Branches horizontally spreading, more or less in whorls; young stems and branches covered with stout, hard prickles; bark pale ash to silver-grey, smooth in the early years, later becoming rough, with irregular vertical cracks.

Leaves large, spreading, glabrous, digitate, leaflets 5-7, lanceolate, 10-20cm long.

Flowers numerous, large, 10-13cm in diam, fleshy, bright crimson, yellow or orange, clustered at the end of branches, bisexual, very rarely unisexual.

Capsules oblong-ovoid, woody, 10-19cm long; seeds many, obovoid, smooth,6-9mm long, oily, with dense silky hairs.

The buttresses are present only in trees of c30 years or more. The tree sometimes reaches very large dimensions, as much as 59m in height and 35m in girth around the buttress. It is eminently suited for afforestation of new ground and of grasslands in the riverain tracts. It is also useful in controlling soil erosion.

The tree is natural habitat, excluding the hills, the absolute maximum shade-temperature varies from 37.5 to 50, the absolute minimum from- 2.5 to 17.5, and the rainfall from 50 to 460cm or more; it thrives best in places where the rainfall is well distributed throughout the year.

Phenology:

The tree commences to shed leaves in the beginning of December, becoming leafless by the end of the month. The new leaves appear in March-April. The flowers appear during Jan- Feb, and sometimes continue up to March. If the leaves are present, the flowers, as a rule, will be less. The tree starts fruiting at the age of about eight years; grafted stock, however, bears fruits after a year. The fruits ripen during April- May. The woody five-valved capsule usually opens when still on the tree. The seeds are covered by masses of white, silky hairs and are easily dispersed by wind, to long distances. The

seeds are irregular, obovoid, dark brown, smooth with a brittle testa. The seeds are collected from mid- March to mid- May and are separated from the floss. The weight of 100 dry fruits is c 2kg, of which the floss is c 600g and seeds c 500g, the rest being made up of the woody rind; 25,300-38,500 seeds weigh a kilogram. Although the seeds are oily, they remain viable for c 2 years, if properly stored. Fresh seeds show high germination percentage and are preferred for sowing.

Part used:

Root, Bark, Flower, Fruit, Gum

Actions:

Root	-	Astringent, demulcent, tonic, aphrodisiac, cooling, slightly diuretic
Bark	-	Demulcent, diuretic, tonic, slightly astringent
Flower	-	Cooling, diuretic, astringent, tonic aphrodisiac, stimulant, expectorant, alterative.
Young fruits	-	Expectorant, stimulant, diuretic
Gum	-	Astringent, styptic, tonic aphrodisiac, demulcent.

Chemical constituents:

Leaves:

Crud protein, 18.69; crud fiber, 11.42; total minerals, 6.96; reducing sugar, 1.2; total sugars, 4.94; and starch, 12.09%.

Flowers:

Calyces:

Moisture, 85.66; crud protein, 1.38; ethwr extr, 0.44; carbohydrates, 11.95; and mineral matter,1.09; calcium, 92.25; phosphorus, 49.0; and magnesium, 54.24 mg|100g.

Fresh petal:

Orang-red anthocyanin, pelagonidin-5β-D-glucopyranoside (C_{21} H_{21} CIO_{10} m p, 300◦) and cyaniding-7-methyl-ether-3 β-glucopyranoside (C_{22} H_{23} CIO_{11}, m p 300◦)

Alcoholic extract of flowers:

Hentriacontane, hentriacontanol, β-sitosterol and its β-D-glucoside, quercetin, kaempferol and an essential oil.

Stamens:

A new polysaccharide consisting of D-galactose, L-arabinose and L-rhamnose in the molecular ratio of 5 5 3 .

Young roots:

Moisture, 7.5; mineral matter, 2.1; pritein, 1.2; fat,0.9; starch, 71.2; pectic substances, 6.0; cellulose,2.0; phpsphatides(cephalin), 0.3; semul-red(a colouring matter), 0.5; tannins, 0.4; non-tannins, 0.1; and sugars(arabinose and galactose), 8.2%.

The proportion of the constituents varies with the age of the roots ; younger roots contain more sugars, starch, and pectic substances than the older roots, but contain less oil, colouring matter and cellulose.

Root bark:

Lupeol,β-sitosterol,8-formyl-7-hydroxy-5-isopropyl-2-methoxy-3-methyl-1,4-nsphthaquinone(C_{16} H_{16} O_5 ,m p 82◦), isohemigossypol-1-methyl ether(C_{16} H_{18} O_4,m p 153◦),

isohemigossypol-1, 2-dimethyl ether(C_{17} H_{20} O_4,m p 101-02◦),

7-hydroxycadalene (C_{15} $H_{18}O$, m p 113-14◦) .

Bark:

Total water extr, 9.92; tannins, 3.01; and non-tannins, 6.91%. It also contains lupeol, β-sitosterol and its D-glucoside.

Gum:

8.9% mineral matter and a considerable propotion of catechol tannin; on complete hydrolysis, it yiels a mixture of L-arabinose, D-galactose, D-galacturonic acid, and possibly rhamnose. The gum also contains tannic and gallic acids.

Seeds:

Moisture, 6.2; crude protein, 28.51; pentosans, 8.9; and mucilage, 2.0%. The seeds also contain n-hexacosanol, palmitic, gallic and tannic acids, octyl palmitate, l-galloyl-β-glucose, ethyl-gallate, α-, β- and γ-tocopherols, carotenoids, and an unidentified terpene.

MEDICINAL USES:

Leaves & Flowers:

The paste of flowers, and also that of leaves, is employed as an application in cutaneous troubles.

Flowers:

These are good for haemorrhage, conjunctivitis, splenomegaly and haemorrhoids.

Root:

It is used in dysentery, gonorrhoea, impotence.

Bark:

It's aqueous extract mixed with curd is used to check blood- dysentery. Externally it is used as a styptic, and also for fomenting wounds. The paste of the bark is applied to skin eruptions.

Gum:

It is used for dysentery, haemoptysis in pulmonary tuberculosis, influenza and menorrhagia, burning sensation, strangury and haemorrhoids.

The young fruits:

These are considered beneficial in calculous affections, chronic inflammation and ulceration of the bladder and kidneys.

Seeds:

It is used in gonorrhoea, chronic cystitis and other catarrhal affection. The hot, aqueous extract of the seeds possesses moderate oxytocic activity.

3.2. GUNAPADAM ASPECT :

Part used:

Leaves, Flower, Seed, Bark,Gum, Cotton, Root.

Taste *(suvai):*

Sweet, Astringent, Bitter.

Character*(thanmai):*

Thatpam

Classifaication*(pirivu):*

Inippu

Gunam:

" **நீர்க்கடுப்பு நீரெரிவு நீண்டொழுகு மேகமும்போம்**
ஆர்க்கும்விந்து வோடைக்கு மாண்மையுறும்- பார்க்குள்
நிலவு மதிவதன நேரிழையே வெப்பாயம்
இலவு மரத்தா லியம்பு"

(AGATHIYAR GUNAVAGADAM)

The bombax ceiba tree cures Burning micturation and Leucorrhoea.Its strengthens the *Sukkilam* and *Rasa thadhu.*

The bark of *Bombax ceiba* is grainded and taken lemon size then mixed with *pulitha neer* nullifies the effect of *Idumarunthu.*

3.3. MODERN ASPECT OF DISEASE :

LEUCORRHOEA :

Physiology of vagina:

It is a fibromuscular passage that connects the uterus to the introitus.The vaginal mucosa is lined by squamous epithelium which consists of a basal layer of cuboidal cells, a middle layer of prickle cells and a superficial layer of cornified cells. Vaginal secretion is small in amount in healthy women, and consists of white coagulated material. The vaginal contents are mostly derived from the squamous cells of the vaginal mucosa. Some contribution comes from endometrium.

Patho physiology:

The superficial cornified cells of the vaginal mucosa produce glycogen under oestrogen stimulation and are continuously desquamated. Subsequently, as a result of the breaking down of the cells, glycogen is liberated and ultimately converted into lactic acid.In the newborn, before the appearance of the Doderlein's bacilli, glycogen is broken down into lactic acid and there is some evidence that the process is brought about by enzyme action. After the appearance of Doderlein's bacilli, the production of the lactic acid is augmented by the action of bacilli on simple sugar.The vaginal secretion is acidic due to the precence of lactic acid and acidity inhibits the growth of pathogenic organisms. The pH of the vagina averages about 4.5 during reproductive life. The acidity, which is undoubtedly oestrogen dependent, falls after the menopause to neutral or even alkaline. Before puberty the pH is about 7. This high pH before puberty and after menopause explains the tendency for the development of mixed organism infections in these age groups.

The components of vaginal secretion are from:

The sweat and sebaceous glands of the vulva and the specialized racemose glands of Bartholin's. The characteristic odour of the vaginal secretion is provided by the apocrine glands of the vulva.

The transudate of the vaginal epithelium and the desquamated cells of the cornified layer. This is strongly acidic.

The mucous secretion of the endocervical glands which is alkaline.

The endometrial glandular secretion.

All these play a varying part at different times of the menstrual cycle, the last two being most active just before menstruation.

Causes of leucorrhoea:

Pathalogical vaginal discharge:

- Non infective
- Infective
- Neoplastic
- Truama

Non infective leucorrhoea:

The term leucorrhoea should be restricted to those conditions when the normal vaginal secretion is increased in amount.

Causes:

i. Physiological excess
ii. Cervical causes
iii. Vaginal causes

Physiological excess:

The normal secretion is expected to increase in conditions when the oestrogen levels become high. Such conditions are

During puberty:

Increased levels of endogenous oestrogen lead to marked overgrowth of the endocervical epithelium which may encroach onto the ectocervix producing congenital erosion increased secretion.

During menstrual cycle:

Around ovulation peak rise of oestrogen increase in secretory activity of the cervical gland.

Premenstrual pelvic congestion and increased mucus secretion from the hypertrophied endometrial glands.

Pregnancy:

There is hyperoestrinism with increased vascularity.This lead to increased vaginal transudate and cervical gland secretion.

During sexual excitement:

When there is abundant secretion from the Bartholin's glands.

Cervical cause:

Non infective cervical lesion may produce excessive secretion which pours out at the vulva. Such lesions are cervical erosion, chronic cervicitis, mucus polyp and ectropion (Cervical glands are exposed to the vagina).

Vaginal causes:

Increased vaginal transudation occurs in conditions associated with increased pelvic congestion. The lesions are uterine prolapse, acquired retroverted uterus, chronic pelvic inflammatory disease and even chronic constipation.

Infections:

Infection of the genital tract may cause muco-purulent or frankly purulent vaginal discharge. The amount, colour, and odour depend upon the type of infection.

Types:

- Specific vaginal infection
- Non specific vaginal infection

Specific vaginal infection:

If the strict definition of accepted as an excessive vaginal secretion in which the primary cause is not infective,any vaginal discharge which is frankly purulent and contains pus cells and from which the causative organism can be isolated and cultured, should be considered as due to specific vaginal infection.

Vulvo-vaginitis:

- Non-specific organisms (Infancy and post-menopausal age groups).
- Tricomonas vaginitis.
- Candida albicans.
- Gonococcal and other bacterial infections (Bartholinitis and Urethritis).

Cervicitis:

- Pyogenic infection due to non-specific organisms during puerperium and following abortion.
- Gonococcal infection.

Endometritis:

- Non-specific infections during puerperium and post-menopausal age.
- Tuberculous endometritis.

It is observed that50% vaginitis is due to bacterial vaginosis

20-25% due to monilial infection

15-20% due to trichomonal infection

Gardnerella (bacterial) vaginosis:

Bacterial vaginosis is termed vaginosis rather than vaginitis, because it is associated with alteration in the normal vaginal flora rather than due to any specific infection. There is a considerable decrease in the number of lactobacilli in the vaginal discharge with 100-fold increase in growth of other anaerobic bacteria.Since lactobacilli release hydrogen peroxide toxic to other bacteria, reduction in their number allow other bacteria, I.e. aerobic and anaerobic bacteria to grow.These are Haemophilus vaginalis, Gardnerella, Mobiluncus and Mycoplama hominis. The bacterial vaginosis is therefore a polymicrobial condition.

It is not sexually transmitted with a variable incubation period. About 50% women are asymptomatic carriers of infection, but majority complain of vaginal discharge without itching and minimal vulval irritation.

The characteristics of vaginal discharge :

White, milky, non-viscous discharge adherent to the vaginal wall.

pH of the discharge is more than 4.5.

Fishy odour when mixed with 10% KOH is due to amino-metabolites from various organism.

Presence of clue cells---the epithelial cells have fuzzy border due to adherence of bacteria.

Increased number of Gardnerella vaginalis and other organisms and reduced number of lactobacilli, and leucocytes.

Causes:

PID

Chorioamnionitis

Pre-mature rupture of membrane (PROM)

Preterm labour

Gonococcal vulvovaginitis:

This is a sexually transmitted disease which can lead to sequelae adversely affecting reproductive functions.

The causative organism is a gram-negative intracellular diplococcus called Neisseria gonorrhoea. The incubation period is 2-10 days. The vaginal squamous

epitheliam is resistant to gonococcal infection. The gonococci attack the columnar epithelium of glands of Skene, Bartholin, urethra and its glands, cervix and fallopian tubes. It ascends in a piggy-back fashion attached to the sperms to reach the fallopian tubes.It is destroyed easily by drying, heat, sunlight, and disinfectants.

Sites for bacterial recovery: These include the urethra, cervix, anal canal and pharynx.

Principal sites of invasion: Columnar epithelium of the genital tract, transitional epithelium of the urethra and Bartholin's gland.

Complications:

Pelvic inflammatory disease, pyosalpinx formation, tubo-ovarian abscess, pelvic abscess followed later on by hydrosalpinx formation, infertility, menstrural disturbances, chronic pelvic pain, dysmenorrhoea and dyspareunia.

Chlamydia:

Chlamydial infection is common in young, sexually active women but rare after the age of 40 years. Two to ten percent of pregnant women are found to have this infection during antenatal period and account for 1% of all abortions. The incubation period is 6-14 days.

Chlamydia trachomatis is a small gram-negative bacteria, an obligate intracellular parasite that appears as intracytoplasmic inclusion body, and is of two varieties, one that causes lymphogranuloma venereum (LGV) and the other of non-LGV, which causes non-specific lower genital tract infection. Often, the infection is silent and the women is asymptimatic but may develop vaginal discharge, dysuria and frequency of micturation, and at times cervicitis.

Sometimes Chlamydia may cause Reiter's syndrome with arthritis, skin lesions, conjunctivitis and genital infection. It also causes perihepatitis and Fitz-Hugh-Curtis syndrome similar to that of gonorrhoea when pelvic inflammatory disease (PID) is associated with right upper abdominal pain. During pregnancy, abortion, preterm labour and IUGR may occur. Newborn suffers from conjunctivitis, nasopharyngitis, otitis media and pneumonia.

Trichomoniasis:

In clinical practice, this is amongst the most common. Nearly half the patients who complain of pruritus vulvae harbour this organism. It is almost entirely a disease of the childbearing era, though young girls and postmenopausal women are not at all immune.There is no doubt that this infection is sexually transmissible but, in some

instances, it can be acquired by inadequate hygiene or the use of an infected person's towels, bath or clothes. Its ingress to the vagina is favoured by a low general resistance and when the pH is raised as during a menstrual period (pH 5-6). It is not uncommon during pregnancy and is often associated with gonococcal infection.

The Trichomonas organism is a protozoa, actively motile, slightly larger than a leucocyte and is anaerobic. Three types of trichomonas are known, namely,

Tr. Buccalis------a normal inhabitant of the mouth.

Tr. Hominis------a normal inhabitant of the anal canal and rectum.

Tr. Vaginalis-----it is found in the vagina.

It has been shown by transplantation experiments that Tr. Buccalis and Tr. Hominis are unable to survive in the human vagina. Men may harbour Tr.vaginalis in the urethra and prostate. A trichomonad has four anterior flagella and one posterior flagella, and they move along the mucous membrane.

Symptoms:

Twenty percent remain asymptomatic – others develop symptoms 4 to 28 days following sexual contact with an infected partner, or infected material, like towel or toilet. Seventy percent show typical discharge, which is profuse, thin, creamy or slightly green in colour, irritating and frothy.

The vaginal walls are tender, angry looking and the discharge causes pruritus and inflammation of the vulva.

There are often multiple small punctuate strawberry spots on the vaginal vault and portio vaginalis of the cervix (strawberry vagina).The characteristic frothy discharge is almost self-diagnostic but the presence of secondary infection may alter and mask this initial sign.

The patient may also complain of urinary symptoms, such as dysuria and frequency, and a low-grade urethritis may be discovered on examination. Abdominal pain, low backache and dyspareunia may also be complained of if pelvic infection occurs.

Candidal (monilial) vaginitis:

It is caused by yeast- like microorganisms called Candida or Monilia. The commenest species causing human disease is Candida albicans, which is gram positive and grows in acid medium. It may be sexually transmitted. Almost 25% women harbour Candida in the vagina, these are often asymptomatic.

Risk factors:

These include promiscuity, immunosuppression, pregnancy, steroid therapy, oral contraception pills, following long-term broad spectrum antibiotic therapy, diabetes mellitus, poor personal hygiene and obesity.

Clinical features:

Pruritus vulva is the cardinal symptom. It is often accompanied by vaginal irritation, dysuria, or both, and passage of thick curdy or flaky discharge. Speculum examination reveals vaginal wall congestion with curdy discharge often visible at the vulval mucocutaneous junction and in the posterior fornix.

Neoplasms:

Any neoplasm of the lower genital tract causes, initially, serous discharge but later due to ulceration of the surface or sloughing of the growth and secondary infection causes offensive, foul smelling blood stained vaginal discharge.

The neoplasms which cause such a vaginal discharge are malignant neoplasms of the cervix and body of the uterus, but in some cases purulent blood stained discharge may be caused by ulceration of the surface of benign polypi of the cervix and endometrium.

Trauma:

Any trauma to the genital tract may cause a local inflammatory reaction. It initially causes a serous vaginal discharge, but later on the discharge becomes purulent due to secondary infection.

The causes of trauma may be:

Physical:

Direct trauma.

Foreign body and pessary.

Chemical:

Drug and antibiotics causing local irritation and burns.

Allergic:

Local antiseptics and drugs used for douching and cleaning.

Contraceptives, i.e., diaphragm and condom.

3.4. SIDDHA ASPECT OF DISEASE :

VELLAI NOI :

Synonyms:

Vettai; Bramium; Bramia rogam; Seezh megam.

Definition:

Purulent white coloured discharge before or after micturation and burning sensation in the urethral orifice.

Prodromal symptoms:

- Sexual intercourse with same diseased patient leads to itching in the genital organ and burning sensation in the urethral orifice within 3 or 4 days.
- During micturation there will be purulent discharge which will be viscous like that of thread.
- Sometimes fever occurs.

Etiology:

1. Excessive sexual intercourse.
2. Sexual into with same diseased patient.
3. Prolonged starvation.
4. Excessive walking during hotsun
5. Excessive intake of tastes like acrid, salt, astringent, bitter.

Classification:

It is classified into 21 types

1. *Valli vellai*
2. *Azhal vellai*
3. *Iya vellai*
4. *Vali azhal vellai*
5. *Azhal Iya vellai*
6. *Mukkutra vellai*
7. *Kal vellai*
8. *Katti vellai*
9. *Nool vellai*
10. *Neer vellai*
11. *Neechu vellai*
12. *Manjal vellai*
13. *Kiricharam vellai*
14. *Karappan vellai*
15. *Thanthi vellai*
16. *Malinam vellai*
17. *Kuruthi vellai*
18. *Seezh vellai*
19. *Inippu vellai*
20. *Pun vellai*
21. *Kambi vellai*

Vali vellai:

In *vali vellai* during micturation urine resembles cow's urine.Pus mixed with the urine and also spasmodic pain is present in the lower abdomen.

Azhal vellai:

In *azhal vellai* black colouration and burning sensation present in the body.During micturation burning sensation in the urethral orifice and also the urine is yellow coloured and mixed with pus.

Iya vellai:

In *iya vellai* white coloured pus mixed with urine. Burning sensation in the urethral orifice. Asper anemia pale colouration is found in the body.

Vali azhal vellai:

In *vali azhal vellai* the symptoms resembles that something has strucked in the urethral orifice. Incontinance, powdered particles and burning micturation is present while urination.

Azhal Iya vellai:

In *azhal iya vellai* disease there is distension and spasmodic pain seen in the lower abdomen.Yellow coloured and pus seen in the urine.

***Mukkutra vellai*:**

In *mukkutra vellai* frequency of micturation and white discharge is seen. Different colour is found in the discharge and precipitate is seen when kept aside.Tingling sensation is seen.

Katti vellai:

In *katti vellai* there is boils in the body, burning and itching in the urethral orifice, fistula is seen and while micturation urine passes through it.

Neer vellai:

In *neer vellai* there is pain the genitals. White discharge and spasmodic pain in the lower abdomen is seen. While defecating pus is mixed and white coloured stools are passed. Urine are passed as like rice gravel.

Thanthi vellai:

In *thanthi vellai* white discharge continuos like thread and then followed by urine during micturaion. Discharge are always found. Burning sensation in the extrimitis. These symptoms are probably concerned to gonorrhoea gleet.

Kurithi vellai:

In kuruthi vellai giddiness, weakness, there is pain during micturation and urine is as that of Rabbit's blood. Dullness in the skin colour, urinary incontinence and redness is seen in the urine.

Seezh vellai:

In *seezh vellai* discharge is seen as it is like pus. Boils in the groin, fistula, wound in the umbilical occurs.Fever with shiver, giddiness and this symptoms may probably acute suppurative urethritis or even acute gonorrhoea.

Ozhukku vellai:

In *ozhukku vellai noi* the urine is found with blood and pus and discharge is seen always.All over the body small pustules are seen, breaks and produce wounds.

Manjal vellai:

In *manjal vellai noi* dischrge is found as pale yellow colour. Burning sensation as that of fire in the urethral orifice. Face becomes yellow, bitterness in the tongue, body becomes more hot.

Neer churukku vellai:

In *neer churukko vellai* urithral orifice become more tensed and while micturation urine is found yellow coloured.White discharge is found. Desire toward consumption of food is decreased and it result in mentally and physically ill.

Karappan vellai:

In *karappan vellai noi* stool is mixed with pus and pain during defecation. The urine is released with more heat. In while body heat is increased and results in wound and spreads like eczema. While micturating small stones are released.

Kal vellai:

In *kal vellai noi* discharge is found like toddy. Pungent body odour. Black coloured stones are released. Pain is found between umbilicus and ribs.

Nool or thandhu vellai:

In *nool vellai noi* discharge appears like thin spider web, pain and blood is seen during micturation. There are sediments found when collected and kept the urine aside. Urine spells like drop by drop.

Neechu vellai:

In *neechu vellai noi* urine is concentrated and appears like toddy and colour as white with pustules. Pricking pain in the lower abdominal and chillness is found.

Vali or malina vellai:

In *malina vellai noi* weakness, bitterness in tongue, pain the soles. During micturation decomposed muscle partical and discharge are seen together.

Then vellai:

In *then vellai noi* , clearless urine and seen like honey while micturating. Urine appears red, fat particles and muscle particles as per water which washed the meat. Wound in the urithral orifice, peculiar smell is found in the urine.

Pun vellai:

In *pun vellai noi*, wound is found all over the body. Blood is mixed in the urine. The joints are found stiff and normal activities are altered,pain in the joints, body heat are increased.

OTHER PREPARATIONS OF *BOMBAX CEIBA :*

Gum of *bombax ceiba*:

Theriar vaagadam:

1. *Athividaya kudineer* ------ *pg no*
2. *Pithaththukku ennai* ------ pg no 183
3. *Neer kazhichaluku kalappuththul* ------ *pg no 230*
4. *Karkam* ------ *pg no 236*

Sigicharathna deepam:

1. *Ingaya chooranam* ------- *pg no 111*
2. *Kiranikesari kuligai* ------- *pg no 152*
3. *Katuvai mathirai* ------- *pg no 153*
4. *Maha madhanakamesura legium* ------- *pg no 160*

Vaithya chinthamani:

1. *Utinavayu kirani maruthuvam* ------- *pg no 176*
2. *Moolavayu kirani maruthuvam* ------- *pg no 179*
3. *Nalapada azhalnoi maruthuvam* ------- *pg no 267*
4. *Markka azhal maruthuvam* ------- *pg no 268*
5. *Asaathiaathisaram* ------- *pg no 170*
6. *Kirani* ------- *pg no 173*

***Noigalukku siddha parikaram*:**

1. *Kudineer* ------- pg no 111

Flower of *bombax ceiba*:

Theriar maha karisal:

1. *Mathana kamesvaram* ------- *pg no 37*

Root of *bombax ceiba:*

Root of *bombax ceiba* is one of the adjuvants for *Loga chenduram* and *Aya chenduram.*

Sarabanthirar vaithya rathnavali (Part 2)------pg no 16

Chthraka kudabagam :

Plambago zeylanica	-------- 1400 gm
Root of *Solanum surattense*	
Root *of Bombax ceiba*	Each 700 gm
Root of *Tribuluse terestris*	
Root of *Tinospora cordifolia*	

All ingredients should be dried well then made into chooranam, taken in a pot add 4 marakkal water then it is kept for one day.Next day sufficient heat given and reduced to 1|4 and then filtered. Add palm jaggery 3500 gm to this mix well and then filter it. Take the decoction boil it and reduced it 1/4.

Next day Honey	-------- 1120 gm
Zingiber officinalis	
Piper nigram	
Piper longum	*Each 70* gm
Cinnamomum verum	
Eletaria cardamomum	

These drugs are mixed with above decoction and grainded well.

Dosage: 21 gm

Therapeutic indication:

Leprosy, cough, bronchial asthma, tuberculosis, peptic ulcer, bleeding piles, sinusitis, hydrocele.

The sinusitis and *agnimantham* which cannot be cured by many medicines can be cured.

Sarabenthirar vaithya rathnavali ------- pg no 100

Decoction for *pitham :*

Root of *Bombax ceiba*

Bark of *Ficus glamuvata*

Bark of *Eugenia jambolana*

Bark of *Roxb lannea*

Root of *Tribuluse terestris*

Root of *Phyllanthus amarus*

Root of *Ficus benghalensis*

Orilai tamarai *Each 35* gm

Pavonia zeylanica

Pavonia odorats

Cuminum cyminum

Alternanthera sessilis

Oryza sativa -Nerpori

Gum of *Limonia acidissima*

Above said ingredients partly ground mixed with water 650 ml in a mud pot. Sufficient heat given and reduced to 1|2 then allow to cool, mash well and filtered it.

Dosage:

60 ml decoction 4 hours once.

Therapeutic indications:

Itching, *pithathalundana thega erichal, piththathazhaluntha thazhumbu*.

Kannusamy paramparai vaithyam ----pg no 79

***Azhal noi marunthu* :**

Root bark of *cassia auriculata*

Root of *bombax ceiba*

Orilai tamarai

Root of *gmelina arborea*

Phyllanthus amarus *each 70* gm

pavonia zeylanica

Root of *hemidesmus indicus*

Phaseolus trilobatus

Vilamichu ver

Root of *pergularia extensa*

Terminalia chebula

Elataria cardamomum

Santalum album *each 17.5* gm

Nardostachys jatamansi

Cedrus deodar

Aii these drugs are powdered and then sieved add equal amount of powder of *Cuminum cyminum* and sugar then given 3 pinches for *Azhal* diseases.

Bark of *bombax ceiba* :

Sigicharathna deepam :

1. *Ilagugangaathara chooranam -* ----- *pg no 121*
2. *Viruththa gangaathara chooranam* ----- *pg no 122*

Vaithya chinthamani :

1. *Nethira bavuthiram* ----- *pg no 211*
2. *Thodaathisaram* ----- *pg no 169*

Young fruit of *bombax ceiba* :

***Agathiar attavanai vaagadam** :*

1. *Athisaram theera podi* ---- *pg no 207*

***Vaithya chinthamani** :*

1. *Thontha kirani* ---- pg no 176

3.5. LATERAL RESEARCH:

1) Hypotensive activity and Hypoglycemic activity:-

A novel constituent, Shamimin, a C-flavonol glucoside from Bombax ceiba leaves showed significant potency as a hypotensive agent at the doses of 15 mg/kg, 3 mg/kg, 1 mg/kg and significant hypoglycaemic activity at 500 mg/kg in Sprague-Dawley rat

(Ref : Saleem R, et,al., Hypotensive, hypoglycaemic and toxicological studies on the flavonol C-glycoside shamimin from Bombax ceiba. Planta Med. 1999 May;65(4): 331-4).

2) Anti-Inflammatory and Hepatoprotective activity:-

The bark, xylem of stem, and root of Bombax malabarica DC and Ceiba pentandra GAERTN are marked as "Mu-mien" in Taiwan. In order to clarify the pharmacological effects of these three parts, anti-inflammatory and liver protective effects were evaluated with carrageenan-induced paw edema and CCl4-induced hepatotoxicity in rats.

(Ref : V. Jain, et.al., Free Radical Scavenging Property of *Bombax ceiba* Linn. Root Research Journal of Medicinal Plant Year:2011Volume:5Issue:4PageNo.:462-470,

Sampath Kumar Evaluation of RBC Membrane Stabilization and Antioxidant Activity of *BOMBAX CEIBA* in an *in vitro* Method International Journal of Pharma and Bio Sciences vol 2:1:2011).

3) Antiangiogenic Activity:-

A methanol extract of the stem barks of *Bombax ceiba* was found to exhibit a significant antiangiogenic activity on *in vitro* tube formation of human umbilical venous endothelial cells (HUVEC). Bioactivity-guided fractionation and isolation carried out on this extract afforded lupeol as an active principle. At 50 and 30 µg/mL lupeol showed a marked inhibitory activity on HUVEC tube formation while it did not affect the growth of tumor cell lines such as SK-MEL-2, A549, and B16-F10 melanoma.

(Ref : Antiangiogenic activity of lupeol from *Bombax ceiba* Young-Jae You, et.al.,Phytotherapy research Vol 17:4 pp341-44 2003).

4) Analgesic and Antioxidants Activity:-

Mangiferin, 2-beta-D-glucopyranosyl-1,3,6,7-tetrahydroxy-9H-xanthen-9-one, obtained directly from methanolic extracts of Bombax ceiba leaves in substantial amounts demonstrated strong antioxidant activity (EC(50) 5.8+/-0.96 mug/ml or 13.74 muM) using DPPH assay comparable to rutin, commonly used as antioxidant for medical purposes. It displayed significant analgesic effect in acetic acid – induced writhing and hot plate test in mice.

(Ref : Dar A, et.al.,Analgesic and antioxidant activity of mangiferin and its derivatives: the structure activity relationship. Biol Pharm Bull. 2005 Apr;28(4):596-600).

5) Cholinesterase Activity:

Leaf and stem bark of the seedling were screened for cholinesterase activity the activity was observed only in leaf.

(Ref : Taiwo O. Elufioye, et.al., Acetylcholinesterase and butyrylcholinesterase inhibitory activity of some selected Nigerian medicinal plants Revista Brasileira de Farmacognosia Brazilian Journal of Pharmacognosy 20(4): 472-477, Ago./Set. 2010).

7) Hepatoprotective Activity:

Hepatoprotective activity of methanolic extract of flowers of Bombax ceiba L. (MEBC) was investigated against hepatotoxicity produced by administering a combination of two anti-tubercular drugs Isoniazid and Rifampicin for 10 and 21 days by intraperitoneal route in rats. MEBC were administered at three graded dose i.e. 150, 300 and 450 mg/kg i.p. 45 min prior to anti-tubercular challenge for 10 and 21 days.

(Ref : Ravi V, et.al.,Hepatoprotective Activity of Bombax ceiba Linn against Isoniazid and Rifampicin-induced Toxicity in Experimental Rats. International Journal of Applied Research in Natural Products Vol. 3 (3), pp. 19-26, Sep-Oct 2010).

8) Anticancer and Anti-HIV Activity:

Methanolic extract of leaves and pure compounds mangiferin and acetyl derivative of mangiferin were evaluated in anticancer and anti-HIV activities. All the samples were evaluated to be inactive as cytotoxic and as anti-HIV agent. On the contrary, inhibitory effects of mangiferin in azoxymethane-induced rat colon carcinogenesis shows its chemoprotective nature. This discrepancy may have arisen due to the differences between the in vitro vs. in vivo assays used to assess the anticancer activity and thereby emphasizes the need to conduct a combination of both types of assays before reaching a definite conclusion.

(Ref : Nam NH, et.al., Inhibitory effects of Vietnamese medicinal plants on tube-like formation of human umbilical venous cells, Phytother Res, 17, 2003, 107-111).

9) Anti-Helicobacter Pylori Activity:

Ethanolic extracts of Bombax malabaricum DC. evaluated strong anti- Helicobacter pylori activities. The minimum inhibitory concentration values of the anti- Helicobacter pylori activity given by the ethanolic extracts ranged from 0.64 to 10.24 mg ml (-1).

(Ref : Yuan CW, Tung LH, Screening of anti-Helicobacter pylori herbs deriving from Taiwanese folk medicinal plants, FEMS Immunology and Medical Microbiology, 43, 2005, 295–300).

10) Inhibitory effects on tube-like formation of human umbilical venous cells Seven of 58 plant materials from Vietnamese medicinal plants were evaluated strong to moderate inhibitory activity on the tube-like formation induced by human umbilical venous endothelial cells in the in vitro angiogenesis assay. These plant materials include the herb of Ephedra sinica, leaves and stem of Ceiba pentandra, seed of Coix lachryma-jobi, rhizome of Drynaria fortunei, fruits and stem of Illicium verum and stem of Bombax ceiba. The methanol extracts of the herb of Ephedra sinica and stem of Ceiba pentandra exhibited the strongest activities with inhibition percentages of 89.3% and 87.5% at 30 and 100 microgram/mL.

(Ref : Yoshimi N, et al., The inhibitory effects of mangiferin, a naturally occurring glucosylxanthone, in bowel carcinogenesis of male F344 rats, Cancer Lett, 163, 2001, 163-170).

4. MATERIALS AND METHODS

4.1. Preparation of *chooranam:*

Material:

Roots of *Bombax ceiba (Ilavu ver*). 8kg of Fresh leaves were taken, then it under gone for shade dry after that the net weigh of the leaves were around 2.5 kg.

Collection And Authendication Of The Materials:

The plant material used in this study was collected during the month of June (2012) from Varusa naadu, Theni Dist, Tamilnadu, India and authenticated from the Gunapadam experts in Deportment of PG Gunapadam, Govt. siddha medical college, Chennai-106 and Certified from Botanist, Central Research Institute For Siddha, Arumbakkam, Chennai-106. The preparation was collected from ***Gunapadam mooligai vaguppu*** by Ka.Sa. Murugesa mudhaliyar**.**

Purification of the Raw Drug:

The plant roots were well rinsed in water to remove the impurities. Then the leaves were cut into pieces and dried in shade.

Preparation of the *chooranam*:

The well dried *Ilavu ver* were made into fine powder. To get the finest physical form of this drug, the powdered material is sieved through a white cotton cloth *(Vashthirakayam).*

Purification of *chooranam*:

The *Chooranam* was moistened with cow's milk. The pot was half filled with milk and water. The mouth of the pot was covered and tied with white cotton cloth. The *Chooranam* (moistened by milk) was placed above the tied cloth. The mouth of the pot closed with another mud pot. The gap between the two mud pots was tied with a wet cloth to avoid evaporation. Then this arrangement was put on fire and boiled until water level gets reduced in the lower pot. Then the powder was taken, dried, powdered finely and preserved for usage.

Preservation:

The purified *Chooranam* was stored in a clean, air tight glass container. Since the life period of the *Chooranam* is only three months, the prepared *Chooranam* must be used within this period.

Figure no : 4.1.*1 Ilavu Ver (Bombax ceiba)*

Figure no : 4.1.*2 Ilavu Ver chooranam*

Administration of the drug:

Form of the medicine	: *Chooranam*
Route of Administration	: Enteral
Dose	: 1gm
Anubanam (Vehicle)	: Warm water
Times of Administration	: Two times a day; before food
Duration	: 7 weeks

4.2. Standardization of the drug

4.2.1. Pharmacognostic aspect:

Ilavu Ver –Bombax ceiba

Collection and authentication of the materials:

Plants were collected from Varusa naadu, Theni dist and identified and authenticated by the Gunapadam experts in Department of P.G. Gunapadam, Govt. Siddha medical college, Chennai – 106 and certified by Botanist, Central Research Institute for Siddha, Chennai – 106.

Collection of specimens

The plant specimens for the proposed study were collected from----------. Care was taken to select healthy plants and normal organs. The required samples of different organs were cut and removed from the plant and fixed in FAA (Farmalin-5ml+ Acetic acid-5ml + 70% Ethyl alcohol-90ml).After 24 hrs of fixing, the specimens were dehydrated with graded series of tertiary –Butyl alcohol as per the schedule given by Sass, 1940. Infiltration of the specimens was carried by gradual addition of paraffin wax (melting point 58-60 C) until TBA solution attained super saturation. The specimens were cast into paraffin blocks.

Sectioning

The paraffin embedded specimens were sectioned with the help of Rotary **Microtome.** The thickness of the sections was 10-12 μm. Dewaxing of the sections was by customary procedure (Johansen, 1940). The sections were stained with **Toluidine blue** as per the method published by O'Brien et al. (1964). Since **Toluidine blue** is a polychromatic stain. The staining results were remarkably good; and some **cytochemical** reactions were also obtained. The dye rendered pink colour to the **cellulose** walls, blue to the **lignified** cells, dark green to suberin, violet to the mucilage, blue to the **protein** bodies etc. wherever necessary sections were also stained with **safranin** and **Fast-green** and IKI(for Starch)

For studying the stomatal morphology, venation pattern and trichome distribution, **paradermal sections** (sections taken parallel to the surface of leaf) as well as **clearing** of leaf with 5% sodium hydroxide or epidermal peeling by partial maceration employing Jeffrey's maceration fluid (Sass, 1940) were prepared. Glycerine mounted temporary preparations were made for macerated/cleared materials. Powdered materials of different parts were cleared with Naoh and mounted in glycerine medium after staining. Different cell component were studied and measured.]

Photomicrographs

Microscopic descriptions of tissues are supplemented with micrographs wherever necessary. Photographs of different magnifications were taken with **Nikon labphoto 2** microscopic Unit. For normal observations **bright field** was used. For the study of **crystals, starch grains** and **lignified** cells, **polarized** light was employed. Since these structures have **birefringent property**, under polarized light they appear bright against dark background. Magnifications of the figures are indicated by the scale-bars. Descriptive terms of the anatomical features are as given in the standard Anatomy books (Esau, 1964).

4.2.2. Physico-chemical analysis:

4.2.2.1 Ash and acid insoluble ash:

To the ash add 1:5 Hcl: Distilled water 15 ml boil, cooled and then filtered using whatman filter paper (No.41) repeat 3 to 4 times till the yellow colour disappear or colourless, then remove the filter paper and add to the filter to the original dish and keep it in the muffle furnace at 600^{o} C and take constant weight and calculate the acid insoluble ash value.

$$\text{Acid insoluble ash (\%)} = \frac{\text{Weight of acid insoluble residue x 100}}{\text{Weight of the sample}}$$

Acid insoluble residue = Acid insoluble ash value – Empty weight of the dish

Loss on drying:

3gm of the drug is heated in a hot oven at 105^{0} c to constant weight. The % of weight was calculated.

Loss on drying value at 105^{0} c - 10.96 %w/w

***Potential of hydrogen* (ph):**

The pH scale is logarithmic and runs from 0.0 to 14.0 with 7.0 being neutral. Readings less than 7.0 indicate acidic solutions, while higher readings indicate alkaline or base solutions.

Above mentioned Quantitative analysis results are showed in the Table :1

4.2.2.2 TLC estimation of *Ilavu ver chooranam*:

Thin-layer chromatography is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. The adsorbent is a relatively thin, uniform layer of dry finely powdered material applied to a glass, plastic or metal sheet or plate. Glass plates are most commonly used.

Identification can be effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation.

Solvent system:

Toluene : Ethyl acetate (4:1.5).

TLC plate:

Aluminium plate precoated with silica gel $60F_{254}$ of 0.2 mm thickness (Merck).

Developing chamber:

Camag's twin trough chamber.

Visualizing reagent:

Vanillin-sulphuric acid reagent.

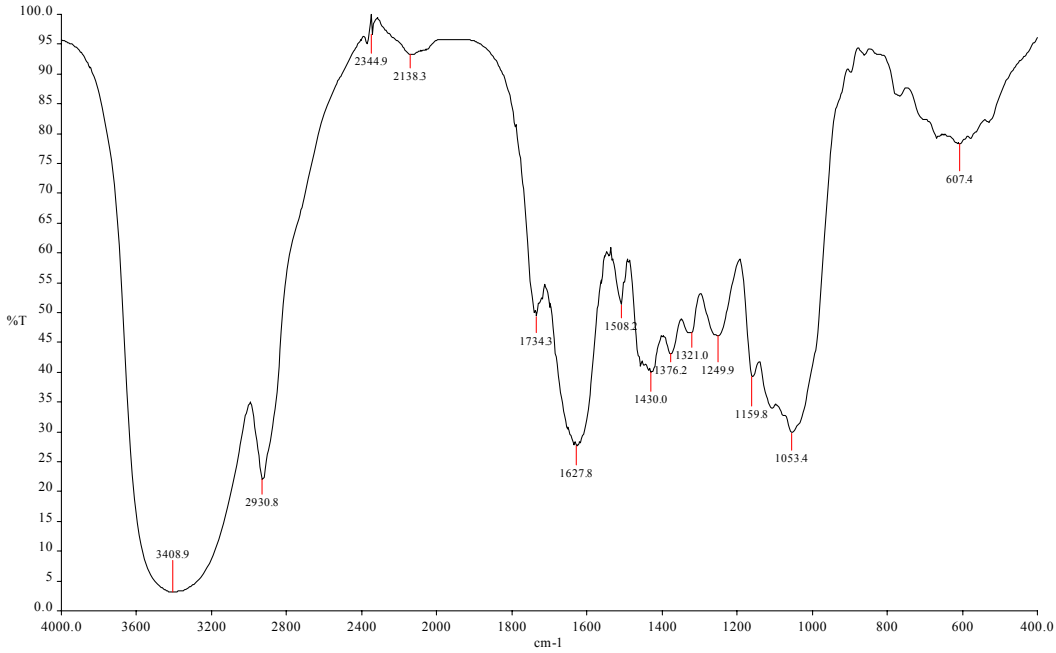
Extract Preparation:

4 g of the chooranam was soaked overnight in chloroform. Boiled on a water bath for 10 mins, filtered and concentrated to 10 ml.

Procedure:

The extract was applied on the TLC using capillary and developed in the solvent system. The developed TLC plate was air dried and photograph was taken in white light. Then dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph taken.

4.2.2.3 Fourier transform infrared spectroscopy (Ftir):



4.2.2.4 scanning electron microscope (sem):

The Scanning Electron Microscope (SEM) is a microscope that was electrons rather than light to form an image. There are many advantages to using the SEM instead of a light microscope.

Resolution : 1.2 nm gold particle separation on a carbon substrate

Magnification : From a min of 12 x to greater than 1, 00,000 X

The SEM has a large depth of field, which allows a large amount of the sample to be in focus at one time. The SEM also produces images of high resolution, which means that closely spaced features can be examined at a high magnification. Preparation of the samples is relatively easy since most SEM one require the sample to be conductive.

The combination of higher magnification, larger depth of focus, greater resolution, and easy of sample observation marks the SEM one of the most heavily used instruments in research areas today.

4.2.3. Qualitative phytochemical analysis:

S.No	Experiment	Observation	Inference
1	**Test for Alkaloids (Dragendorff's Test)** Few mg of extract in separate test tube was warmed with 2% Sulphuric acid for 2 minutes. And it was filtered in separate test tube and few drops of Dragendorff's reagent were added	. The presence of orange red precipitates indicates .	the presence of alkaloids.
2	**Test for Flavonoids (Shinoda test)** Substance is dissolved in alcohol, added with magnesium bits and concentrated hydrochloric acid. On heating over a water bath	the appearance of majenta colour shows	presence of flavonoids.
3	**Triterpenoids (Noller's Test)** To fewmg of extract, add tin and thionyl chloride and heat in water bath	Purple colour indicates	presence of tritepenoids.
4	**Test for steroids:**An ethonolic extract of plant sample 2ml is mixed with 2 ml H_2SO_4 and 0.5 gm Acetic anhydride	The solution turns in to blue to green colour	Presence of Steroids
5	**Test for Phenol** Substance in water is added with 5 % alcoholic ferric chloride	.Dark blue or green colour shows	presence of phenol

6	**Test for Tannin** Substance is shaken with water and added with lead acetate solution	White precipitate shows	presence of tannin.
7	**Test for Saponins** To few mg of extract distilled water is added and shaken well	The formation of foam indicates	presence of saponin.

4.2.4. Chemical analysis :

Proximate Chemical Analysis of a Drug

Methodology For Chemcial Analysis

Preparation of Extract :

Add 5 gm of the sample to 50ml of distilled water. Boil the solution for 20 minutes, cool and then filter. Use the Extract for the following tests.

S.No	Experiment	Observation	Inference
1.	**Test for reducing Sugar :** To 5ml of Benedicts qualitative reagent, add 10 drops of extract, then boil for two minutes	Green / Yellow / Red PPT	Presence of Reducing Sugar
2.	**Test for Starch :** To 5 ml of extract add 2ml of acetic acid and then add few drops of N/50 Iodine Solution.	Blue Colour	Presence of Starch
3.	**Test for Proteins :** To 2 ml of extract, add 2ml of 5% Sodium Hydroxide mix and add 2 drops of Copper Sulphate Solution.	Violet or Purple Colour	Presence of Proteins
4.	**Test for amino Acid :** Place 2 drops of extract on a filter paper and allow to dry well. Then spray 1% ninhydrin over the same and allow to dry.	Violet Colour	Presence of Amino Acid

5.	**Test for Albumin :** To 2 ml of extract, add 2ml of Esboch's reagent.	Yellow PPT	Presence of Albumin
6.	**Test for Phosphate :** To 2ml of extract, add 2ml of ammonium Molybdate solution and 2ml of concentrated Nitric Acid.	Yellow PPT	Presence of Phosphate
7.	**Test for Sulphate :** To 2 ml of extract add 2ml of 4% ammonium oxalate solution.	White PPT	Presence of Sulphate
8.	**Test for Chloride :** Add 2ml of extract to dilute nitric acid till the effervescence ceases. Then add 2 ml of Silver Nitrate Solution.	Cloudy White PPT	Presence of Chloride
9.	**Test for Iron :** To 2ml of extract, add 2ml of ammonium thio cynate solution and add 2ml of concentrated Nitric Acid.	Red Colour	Presence of Iron
10.	**Test for Calcium :** To 2 ml of extract, add 2 ml of 4% ammonium Oxalate Solution.	White PPT	Presence of Calcium
11.	**Test for Sodium :** Make a paste with 2 pinches of the sample with Hcl and Introduce it into the blue flame.	Yellow Flame	Presence of Sodium
12.	**Test for Potassium :** Add a pinch of the sample to 2 ml of Sodium Nitrate Solution. Then add 2ml of Cobal Nitrate in 20% acetic acid.	Yellow PPT	Presence of Potassium

S.No	Experiment	Observation	Inference
13.	**Test for Zinc :** To 2ml of extract, add few drops of Sodium Hydroxide.	White PPT	Presence of Zinc
14.	**Test for Magnesium :** To 2ml of extract, add few drops of Sodium Hydroxide Solution	White PPT	Presence of Magnesium
15.	**Test for Alkaloids :** a. To 2ml of extract, add 2ml of Potassium Iodide Solution b. To 2ml of extract add 2ml of Picric Acid. c. To 2 ml of extract add 2ml of Phosphotunqstic Acid.	Red Colour Yellow Colour White PPT	Presence of Alkaloids Presence of Alkaloids Presence of Alkaloids
16.	**Test for Tannic Acid :** To 2ml of extract add 2 ml of Ferric Chloride Solution	Black PPT	Presence of Tannic Acid

4.3 PHARMACOLOGICAL STUDY:

Antimicrobial activity of *ilavu ver chooranam*

Introduction:

Pathogens are a major concern for a variety of industries—food, human and animal health, and plant. Foodborne illnesses are a continuous threat to public health. The 31 major foodborne pathogens account for nearly 9.4 million people becoming sick, more than 55,961 hospitalizations, and 1,351 deaths from foodborne illness each year in the United States with an estimated economic cost of $152 billion annually. Further, losses in major crops due to fungal and bacterial pathogens ranges from 7-22%, with losses reported for potatoes (22%), wheat (16%), rice (16%), barley (15%), maize (10%), cotton (9%), sugar beet (8%), and soybeans (7-16%). There are many methods of inhibiting or inactivating microorganisms, however, interest in the use of natural plant-derived products versus chemicals as antimicrobials is increasing significantly, including their use in the protection of foods and crops.

Further, various bacteria have developed resistance to certain antibiotics, and thus, other forms of bactericidal agents are required. India is a land of rich biodiversity. The total number of lower and higher plants in India is about 45,000 species. The plants are potential source of medicines since ancient times. According to World Health Organization, 80% of the populations in the world depend on traditional medical practitioners for their medicinal needs. Many formulations of plants and their products such as medicines are said in the form of hymns in the Vedas. Yet a scientific study of plant to determine their anti-microbial material is comparatively new.

Numerous surveys on antimicrobial medicinal plants had been made in United States and in many countries throughout the world. Since ancient times, plants have been model source of medicines as they are a reservoir of chemical agents with therapeutic properties. The general population is increasingly using herbal medicines as dietary supplements to relieve and treat many different human disorders. Herbs and spices are an important part of the human diet. They have been used for thousands of year to enhance the flavour, colour and aroma of food. In addition to boosting flavour, herbs and spices are also known for their preservative and medicinal value, which forms one of the oldest sciences. Yet it is only in recent years that modern science has started paying attention to the properties of spices.

Medicinal and spice plants are renewable raw materials. Their production is an alternative to the overproduction of traditional crops in agriculture. They also have an increasing economic importance. For thousands of years, plants have been used as a rich source of bioactive compounds. Plants are continually attacked by a multitude of pathogens and have adapted natural defense mechanisms which protect them from developing disease.

Materials and methods:

Antimicrobial assay-Isolation and maintenance of cultures

Esherichia coli and Bacillus subtilis were extracted from food stuffs by serial dilution agar plate method. In this method, serial dilutions of samples obtained from food stuffs were prepared and aliquots from each dilution were added to the plates containing nutrient agar to allow the growth of microbes. All the bacterial isolates were identified by cultural, morphological biochemical characteristics (Gram and endospore staining). The plates were kept in an incubator at 37ºC. The slants were prepared from the pure cultures obtained and kept in the refrigerator at 4^0C for further use.

Standardization of inoculums:

The microbial inoculum was standardized at 0.5 McFarland. In microbiology, McFarland standards are used as a reference to adjust the turbidity of bacterial suspensions so that the number of bacteria will be within a given range. Original McFarland standards were made by mixing specified amounts of barium chloride and sulfuric acid together. Mixing the two compounds forms a barium sulfate precipitate, which causes turbidity in the solution. A 0.5 McFarland standard is prepared by mixing 0.05 ml of 1.175% barium chloride dihydrate ($BaCl_2 \bullet 2H_2O$), with 9.95 ml of 1% sulfuric acid (H_2SO_4). The standard could be compared visually to a suspension of bacteria in sterile saline or nutrient broth.

Antibacterial Activity:

The antibacterial activity was determined using the hole-in-plate bio assay procedure. The pure cultures of the microorganisms were inoculated onto Muller-Hilton nutrient broth incubated at temperature of 37°C for 24 hours. Using a sterile cork-borer of 5mm diameter, three holes were made into the Petri dishes seeded with bacterial culture. Concentrations of 25, 50 and 100µg/ml solution were reconstituted in distilled water and transferred into the wells. The plates were incubated at temperature of 37°C for 18 hours. S. aureus, E. coli, Salmonella typhi, P.aurigunosa, St. pyogenes, Neigerria gonorrhea, St. sapro, S. pneumococci, Klebsieela pneumoneae and Candida albicans were used as the test microorganisms. All microbial cultures were maintained on nutrient agar slants at temperature of 4ºC and sub cultured onto nutrient agar broth for 24 hours prior to testing.

The plates were kept for 30 min at room temperature to allow diffusion of the test drug, and then were incubated at temperature of 37º C for 18 hours. After the incubation period, the zones of inhibition will be measured using a caliper. Studies were performed in triplicates and the mean value was calculated. The mean zones of inhibitions were compared by one way analysis of variance.

Agar well diffusion method:

Antibacterial activity of spices was tested using agar well diffusion method. 200µl of bacteria was aseptically introduced and spread using cotton swabs on surface of gelled sterile Muller Hilton agar plates. A well of about 6.0mm diameter with sterile cock borer was aseptically punched on each agar plate. 50µl of the IVC were introduced into the wells in the plates. A negative control well was too made with 50µl of the sterile distilled

water. Plates were kept in laminar flow for 30 minutes for pre diffusion of IVC to occur and then incubated at 37ºC for 24 hours. Resulting zone of inhibition was measured.

For determination of antimicrobial activity of three doses of IVC, different bacterial and fungal strains were used by agar ditch method. The pathogenic cultures were swabbed separately in each air dried pre-incubated Nutrient Agar and Sabouraud Dextrose Agar plates with help of sterile cotton swabs. Ditches were prepared in agar plates with the help of surface sterilized borer. After boring the plant extract were added separately to the ditches (50µl).

The plates were incubated at 37^0C. Controls were maintained. After 24 h diameter of clear zone produced around the ditches were measured to the nearest mm with the help of the micro scales.

4.4 CLINICAL ASSESSMENT:

Leucorrhoea is one among the common ailments affecting women. It may be due to various causes. It is a very common presenting disease in general practice. It is a physical, social and emotional problem in the prime time of a woman's life. Most of the organisms can infect the female genital tract and totally account for considerable suffering. As the above mentioned problem generally prevails among the women. Even though there is a lot of medications available for this disease, still there is a thrive for less adverse effect drugs. Herbal medicines are playing vital role on curing diseases without marked adverse effects even though on long term intake. From this plant kingdom I have selected this herb which proved its anti – microbial activity pre clinically. *Ilavu Ver chooranam*, a herbal medicine was used for this clinical trial to prove its safety and efficacy against Leucorrhoea.

Objectives:

The study was conducted on peptic leucorrhoea patients to assess the "anti-microbial" activity of ***"Ilavu Ver Chooranam "*** clinically, both in-patients and out-patients of both sex and varying age groups.

Study centre:

The clinical study for **leucorrhoea** is carried out in outpatient department and in patient ward of Govt.Siddha medical college hospital and Arignar Anna Indian Hospital, Arumbakkam, Chennai-106.

Design of the study:

Open clinical trial, phase II B

Selection :

50 patients from women in the age group of 20 – 50 years were chosen. The selection was based on the including and excluding criteria. They were clinically diagnosed on the basis of Siddha principles with modern laboratory findings.

Registration process

To register a patient, the following documents has been proceeded.

- Copy of required laboratory tests
- Signed patient consent form

then I verified eligibility and assigned a patient study number, drug dose and registered the patient on the study.

Criteria selection:

Inclusion criteria:

i) Excessive Watery Discharge
ii) Yellowish discharge
iii) Mucoprulent discharge
iv) Itching in vulva
v) Low back pain
vi) Lower abdominal pain
vii) Dysuria
viii) Trichomonas vaginalis
ix) Candida albicans

Exclusion criteria:

i) White discharge with bleeding
ii) Malignancy condition
iii) Pelvic inflammatory disease
iv) Pregnancy
v) Gonorrhoeal disease
vi) Sexually transmitted disease
vii) Any other systemic disorder

Criteria for withdrawal:

Patients were removed from study when any of the criteria listed below applies.In the absence of treatment delays due to adverse events, treatment may continue for 2 cycles or until one of the following criteria applies:

- Disease progression,
- Deterioration of vital signs with cardiac, respiratory, hepatic, renal and CNS changes.
- Intercurrent illness that prevents further administration of treatment,
- Unacceptable adverse event(s),
- Patient decides to withdraw from the study, or
- General or specific changes in the patient's condition render the patient unacceptable for further treatment in the judgment of the investigator.

Investigation:

The patients were undergone routine blood, urine and ultra sonogram for abdomen. Vaginal smear was done in private laboratory.

The duration of treatment ranges between 7-8 weeks according to the severity of symptoms. Clinical investigations were done before and after treatment.

Administration of the drug:

Form of the medicine	:	*Chooranam*
Route of Administration	:	Enteral
Dose	:	1 gm
Anubanam (Vehicle)	:	Warm water
Times of Administration	:	Two times a day; after food.
Duration	:	7 Weeks

Diet and medical advice:

- Advise regarding personal hygiene
- Avoidance of synthetic garments
- Finger nails should be clipped short.
- Avoidance of contamination of vulva with ablution water after bowel action.
- Improving general health by advising to take adequate vegetables.
- The partners should also be enquired for infection and advised for treatment.

Trial conduct:

This study will be conducted in compliance with the protocol approved by the Institutional Review Board, and according to Good Clinical Practice standards. No deviation from the protocol will be implemented without the prior review and approval of the IRB except where it may be necessary to eliminate an immediate hazard to a research subject. In such case, the deviation will be reported to the IRB as soon as possible.

Criteria for assessment of response to therapy:

1. **Good Response:**
   a. Relief of symptoms above 75%.
2. **Fair Response:**
   a. 50 % to 70 % relief in symptoms.
3. **Poor Response:**
   25 % to 49% relief in symptoms.
4. **No response:**

Follow up:

Assessment was taken for every three days before treatment and after treatment. During this period clinical assessment and laboratory investigation was carried out.

Statistical analysis:

The data will be tabulated and analyzed by students 'T' test. The resuls are showed in Table:6 and 7

Ethical review:

The protocol and amendments were submitted to the Govt siddha medical college, Institutional Ethical Committee (IEC) and got formal approval for conducting the study. The decision of the IEC concerning the conduct of the study was made in writing to the investigator.

All subjects for this study was provided a consent form describing this study and provided sufficient information for subjects to make an informed decision about their participation in this study. This consent form was submitted with the protocol for review and approval by the IEC. The formal consent of a subject, using the IEC - approved consent form, was obtained before that subject is submitted to any study procedure. This consent form was signed by the subject or legally acceptable surrogate, and the investigator-designated research professional obtaining the consent.

CLINICAL STUDY ON "ILAVU VER CHOORANAM" IN INPATIENTS DEPT. IN THE MANAGEMENT OF "VELLAI NOI"

Sl. No	IP No.	Name Age & Sex	Complaints	Duration of treatment (in days)	BT & AT	Investigation													
						Blood								Urine					
							DC (%)			ESR (mm)		Hb gm	Sug (R) Mg/ dl						
						TC cells/ Cumm	P%	L %	E %	½ hr	1 hr			Al	Sug	Dep	Vaginal smear	VDRL	Result
1.	831/ 936	Soorya 35/ F	Mucopurulent discharge, itching in vulva, lower abdomen & low back pain, dysuria.	28.06.2012 to 03.08.2012	BT	10200	57	37	6	11	33	11.5	108	Nil	Nil	Few epi thelial cells seen	Tv+ve	Non-Reactive	Good
					AT	10100	58	39	3	14	26	11.8	100	Nil	Nil	Nil	Tv -ve	-	
2.	1072/ 6653	Devi 38/F	Excessive watery discharge, lower abdomen pain, low back pain.	20.07.2012 to 28.07.2012	BT	8900	53	40	7	13	34	10.6	110	Nil	Nil	Few pus cells seen	Non - specific	Non-Reactive	Good
					AT	8500	54	39	7	12	18	10.5	114	Nil	Nil	Nil	-	-	
3.	1160/ 9231	Devi 33/F	Mucopurulent discharge, itching in vulva, lower abdomen & low back pain, dysuria.	30.07.2012 to 05.08.2012	BT	9800	60	36	4	14	28	10.9	98	Nil	Nil	Few pus cells seen	Tv+ve	Non-Reactive	Good
					AT	9900	57	38	5	11	32	11	94	Nil	Nil	Nil	Tv-ve	-	
4.	1155/ 9011	Sundari 40/F	Mucopurulent discharge, itching in vulva, lower abdomen & low back pain, dysuria.	30.07.2012 to 09.08.2012	BT	9700	57	36	7	12	24	11	100	Nil	Nil	Few epi thelial cells seen	C.albicans +ve	Non-Reactive	Mild
					AT	9100	55	40	5	10	24	11	114	Nil	Nil	Nil	C.albicans +ve	-	
5.	1300/ 3431	Miniyammal 35/F	Mucopurulent discharge, itching in vulva, lower abdomen & low back pain,	17.08.2012 to 03.10.2012	BT	8100	59	39	2	15	36	12	110	Nil	Nil	Nil	Tv+ve	Non-Reactive	Good
					AT	8100	53	43	4	12	24	12.5	110	Nil	Nil	Nil	Tv-ve	-	

6.	1354/ 5569	Narayani 40/F	Mucopurulent discharge, itching in vulva, low back pain, dysuria .	27.08.2012 to 03.09.2012	BT	9100	53	40	7	13	26	9	104	Nil	Nil	Few pus cells seen	Tv+ve	Non-Reactive	Good
					AT	9300	52	43	5	14	36	9.5	110	Nil	Nil	Nil	Tv-ve	-	
7.	1428/ 7477	Magathunbi 39/F	Mucopurulent discharge, itching in vulva, lower abdomen & low back pain, dysuria	04.09.2012 to 15.09.2012	BT	9700	54	40	6	15	30	11.5	98	Nil	Nil	Nil	Tv+ve	Non-Reactive	Good
					AT	9000	56	40	4	10	26	11.5	98	Nil	Nil	Nil	Tv-ve	-	
8.	146/ 3822	Fathima 41/F	Mucopurulent discharge, itching in vulva & low back pain, dysuria.	01.10.2012 to 12.10.2012	BT	10100	57	38	5	14	36	11	105	Nil	Nil	Few pus cells seen	Tv+ve	Non-Reactive	Good
					AT	10200	54	43	3	15	42	11.5	105	Nil	Nil	Nil	Tv-ve	-	
9.	224/ 6423	Rabekha 39/F	Mucopurulent discharge, itching in vulva,low back pain, dysuria.	11.10.2012 to 12.11.2012	BT	9500	54	39	7	16	32	11.6	101	Nil	Nil	Few pus cells seen	Tv+ve	Non-Reactive	Good
					AT	9700	56	37	7	11	24	12	106	Nil	Nil	Nil	Tv-ve	-	
10.	540/ 6355	Lakshmi 39/F	Mucopurulent discharge, itching in vulva, low back pain, dysuria	28.11.2012 to 06.12.2012	BT	9500	54	40	6	17	34	12	114	Nil	Nil	Nil	Tv+ve	Non-Reactive	Good
					AT	9500	55	43	2	15	30	11.5	100	Nil	Nil	Nil	Tv-ve	-	

ABBREVATION :

BT - Before Treatment
AT - After Treatment

TC – Total count
DC – Differential count
P – Polymorphs
L – Lymphocytes
E – eosinophil

ESR – Erythrocyte sedimentation rate
Hb – Haemoglobin
Al – Albumin
Sug – Sugar
Dep – Deposits
VDRL – Venereal disease research Laboratory.

CLINICAL STUDY ON "ILAVU VER CHOORANAM" IN OUT-PATIENTS DEPT. IN THE MANAGEMENT OF "VELLAI NOI"

Sl. No	OP. No.	Name Age & Sex	Complaints	Duration of treatment (in days)	BT & AT	Investigation													
						Blood								Urine					
							DC (%)			ESR (mm)		Hb gm	Sug (R) mg/dl						
						TC cells/ Cumm	P %	L %	E %	½ hr	1 hr			Al	Sug	Dep	Vaginal smear	VDRL	Result
1.	2957	Bhavani 29/F	Excessive watery discharge, lower abdomen pain, low back pain.	06.07.2012 to 17.08.2012	BT	10200	52	41	7	12	24	10.6	83	Nil	Nil	Few epi thelial cells seen	Non-specific	Non-Reactive	Good
					AT	10100	54	43	3	11	20	11.2	90	Nil	Nil	Nil	-	-	
2.	3866	Geetha 34/F	Mucopurulent discharge, itching in vulva, lower abdomen pain, low back pain, dysuria.	10.07.2012 To 19.08.2012	BT	8200	55	39	6	5	13	10.2	83	Nil	Nil	Few puscells seen	-	Non-Reactive	Good
					AT	8100	57	38	5	9	18	11.5	90	Nil	Nil	Nil	-	-	
3.	785	Elizabath 354F	Muco prulent discharge, Itching in vulva, lower abdomen and low back pain, dysuria.	10.07.2012 to 20.08.2012	BT	9200	55	42	3	5	9	10.5	105	Nil	Nil	Few puscells seen	Tv+ve	Non-Reactive	Good
					AT	9000	53	42	5	6	12	10	100	Nil	Nil	Nil	Tv-ve	-	
4.	5423	Eswarii 35/F	Excessive watery discharge, low back pain, lower abdomen pain.	12.07.2012 to 23.08.2012	BT	8100	54	43	3	15	30	11.5	105	Nil	Nil	Few puscells seen	Non - specific	Non-Reactive	Mild
					AT	8400	54	41	5	11	23	11.6	108	Nil	Nil	Nil	-	-	
5.	3629	Sheela 34/F	Mucopurulent discharge, Itching in vulva, dysuria.	14.07.2012 to 26.08.2012	BT	8700	58	37	5	16	32	10	89	Nil	Nil	Few pus cells seen	Tv+ve	Non-Reactive	Good
					AT	8500	56	40	4	8	20	10.5	94	Nil	Nil	Nil	Tv-ve	-	

6.	5480	Vanaja 31/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	16.07.2012 to 28.08.2012	BT	9000	54	42	4	12	38	12.4	88	Nil	Nil	Few pus cells seen	Tv+ve	Non Reactive	Moderate
					AT	9200	52	43	5	14	30	12	90	Nil	Nil	Nil	Tv+ve	-	
7	3287	Sumathy 36/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	19.07.2012 To 01.09.2012	BT	9700	60	36	4	16	30	10.6	85	Nil	Nil	Few pus Cells seen	c.albicans+ve	Non Reactive	Mild
					AT	9400	56	37	7	10	29	10.8	90	Nil	Nil	Nil	c.albicans+ve	-	
8.	2652	Sowmia 35/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	22.07.2012 to 04.09.2012	BT	9400	53	44	3	15	32	11	102	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9000	52	43	5	12	22	11.6	98	Nil	Nil	Nil	Tv-ve	-	
9.	986	Padhmavathy 40/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	27.07.2012 to 07.09.2012	BT	8900	53	41	6	12	28	9.8	90	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	8500	57	41	2	9	26	10.2	98	Nil	Nil	Nil	Tv-ve	-	
10.	3524	Sharmila 25/F	Mucopurulent discharge, Itching in vulva, lower abdomen pain, dysuria.	03.08.2012 to 15.09.2012	BT	9300	57	39	4	5	18	11.6	84	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9100	55	39	6	5	16	11.5	90	Nil	Nil	Nil	Tv-ve	-	

11.	4821	Vidhya 26/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	07.08.2012 to 19.09.2012	BT	8100	53	40	7	9	22	11.6	84	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	8700	54	41	5	5	16	11	90	Nil	Nil	Nil	Tv-ve	-	
12.	3249	Kalpana 35/F	Excessive watery discharge, low back pain, lower abdomen pain.	14.08.2012 to 25.09.2012	BT	10300	55	39	6	7	16	10.4	116	Nil	Nil	Few pus Cells seen	Non-specific	Non Reactive	Good
					AT	10200	56	37	7	8	22	11.5	110	Nil	Nil	Nil	-	-	
13.	1267	Renuga devi 39/F	Mucopurulent discharge, Itching in vulva, low abdomen pain, low back pain.	23.08.2012 to 04.10.2012	BT	9300	57	36	7	11	24	11	98	Nil	Nil	Nil	Tv+ve	Non Reactive	Good
					AT	9100	56	39	5	12	26	11.5	90	Nil	Nil	Nil	Tv-ve	-	
14.	7812	Hema 27/F	Mucopurulent discharge, Itching in vulva, low back & low abdomen pain, dysuria	05.09.2012 to 14.10.2012	BT	7900	56	39	5	8	16	9.5	98	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	7700	53	43	4	7	14	10.5	99	Nil	Nil	Nil	Tv-ve	-	
15.	8466	Uma maheswari 26/F	Mucupurulent discharge, Itching in vulva, low back pain, dysuria.	08.09.2012 to 21.10.2012	BT	7300	57	37	6	10	19	9.5	110	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Moderate
					AT	7700	56	39	5	8	15	9.8	108	Nil	Nil	Nil	Tv+ve	-	

16.	8771	Jothy 27/F	Excessive watery discharge, lower abdomen pain, low back pain.	10.09.2012 to 21.10.2012	BT	8500	53	41	6	12	26	10.6	102	Nil	Nil	Nil	Non-specific	Non Reactive	Good
					AT	8600	57	41	2	10	22	10.8	112	Nil	Nil	Nil	-	-	
17.	7569	Sangeetha 32/F	Mucopurulent discharge, low back pain, Itching in vulva, dysuria.	13.09.2012 to 25.10.2012	BT	9400	56	37	7	13	26	11	108	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9700	54	42	4	12	22	11.4	98	Nil	Nil	Nil	Tv-ve	-	
18.	3548	Gomathy 36/F	Mucopurulent discharge, Itching in vulva, lower abdomen pain, dysuria.	16.09.2012 to 27.10.2012	BT	9400	54	41	5	14	34	11.6	106	Nil	Nil	Few epithelial cells	Tv+ve	Non Reactive	Good
					AT	9100	54	42	4	13	20	12	105	Nil	Nil	Nil	Tv-Ve	-	
19.	5821	Subathra devi 34/F	Mucopurulent discharge, Itching in vulva, dysuria.	21.09.2012 to 01.11.2012	BT	9000	55	39	6	18	34	8.6	112	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9100	58	40	2	10	24	9.6	110	Nil	Nil	Nil	Tv-ve	-	
20.	2533	Dhana lakshmi 37/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	25.09.2012 to 06.11.2012	BT	8300	51	43	6	10	20	10	94	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	8600	55	42	3	12	20	10.2	98	Nil	Nil	Nil	Tv-ve	-	

21.	983	Lakshmi 39/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	03.10.2012 to 12.11.2012	BT	8700	55	42	3	12	32	10.6	100	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	8900	55	40	5	8	24	10.8	110	Nil	Nil	Nil	Tv-ve	-	
22.	6547	Meena 33/F	Mucopurulent discharge, low back pain, Itching in vulva.	07.10.2012 to 19.11.2012	BT	8200	55	39	6	15	32	9.8	110	Nil	Nil	Few pus Cells seen	C.albicons +ve	Non Reactive	Mild
					AT	8000	54	42	4	11	22	9	105	Nil	Nil	Nil	C.albicons +ve	-	
23.	5791	Kanimozhi 25/F	Excessive watery discharge, lower abdomen pain, low back pain.	09.10.2012 to 21.11.2012	BT	9700	60	33	7	16	32	10.6	92	Nil	Nil	Few pus Cells seen	Non-specific	Non Reactive	Good
					AT	9900	59	35	6	11	24	10.5	98	Nil	Nil	Nil	-	-	
24.	6744	Chithra 30/F	Mucopurulent discharge, Itching in Vulva. low back pain. dysuria.	10.10.2012 to 23.11.2012	BT	8300	56	39	6	12	32	10.8	90	Nil	Nil	Nil	Tv+ve	Non Reactive	Good
					AT	8800	54	42	4	8	16	11	86	Nil	Nil	Nil	Tv-ve	-	
25.	6087	Bhuvaneswari 24/F	Excessive watery discharge, lower abdomen pain, low back pain.	10.10.2012 to 22.11.2012	BT	10300	58	38	4	12	36	10.6	84	Nil	Nil	Nil	Non-specific	Non Reactive	Good
					AT	10000	54	43	3	12	24	11	96	Nil	Nil	Nil	-	-	

26.	6387	Hilda mary 22/F	Excessive watery discharge, lower abdomen pain, low back pain.	11.10.2012 to 23.11.2012	BT	9200	56	40	4	20	36	10.5	98	Nil	Nil	Few pus Cells seen	Non-specific	Non Reactive	Good
					AT	9000	57	41	2	13	26	10	86	Nil	Nil	Nil	-	-	
27.	7811	Manjula 33/F	Mucopurulent discharge, Itching in Vulva, lower abdomen & low back pain, dysuria.	17.10.2012 to 28.11.2012	BT	9700	55	39	6	18	32	11.6	112	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9200	56	40	4	9	22	11.5	110	Nil	Nil	Nil	Tv-ve	-	
28.	5213	Kala 42/F	Mucopurulent discharge, Lower abdomen pain, low back pain, dysuria.	24.10.2012 to 05.12.2012	BT	7700	52	41	7	12	24	9.6	108	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Moderate
					AT	7900	52	42	5	10	16	9	112	Nil	Nil	Nil	Tv+ve	-	
29.	344	Jothy lakshmi 29/F	Mucopurulent discharge, Itching in Vulva, low back pain, dysuria.	31.10.2012 to 11.12.2012	BT	9800	60	34	6	14	32	11.4	102	Nil	Nil	Nil	Tv+ve	Non Reactive	Good
					AT	9100	58	38	4	14	24	11	100	Nil	Nil	Nil	Tv-ve	-	
30	315	Aanandhi 35/F	Mucopurulent discharge, Itching in Vulva, low back pain, dysuria.	31.10.2012 to 13.12.2012	BT	10200	55	39	6	10	20	10.5	98	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	10100	52	43	5	8	16	10.8	90	Nil	Nil	Nil	Tv-ve	-	

31.	597	Nithya 25/F	Mucopurelnt discharge, itching in vulva, low back pain, dysuria.	01.11.2012 to 09.12.2012	BT	7300	53	41	6	15	30	11	90	Nil	Nil	Few pus Cells seen	C.albicans +ve	Non Reactive	Mild
					AT	7100	53	40	7	8	16	11.5	94	Nil	Nil	Nil	C.albicans +ve	-	
32.	602	Uma 24/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	01.11.2012 to 08.12.2012	BT	9900	52	38	9	14	34	10	98	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9400	54	43	3	7	14	10.6	94	Nil	Nil	Nil	Tv-ve	-	
33.	1258	Vasanthi 40/F	Excessive watery discharge, lower abdomen and low back pain.	03.11.2012 to 09.12.2012	BT	9300	57	37	6	9	18	11	90	Nil	Nil	Few pus Cells seen	Non - specific	Non Reactive	Good
					AT	9500	57	41	2	10	24	10.8	98	Nil	Nil	Nil	-	-	
34.	138	Shanthi 40/F	Mucopurulent discharge, Itchingin vulva, low back pain, dysuria.	05.11.2012 to 10.12.2012	BT	10200	55	39	6	15	30	10.4	90	Nil	Nil	Few epithelial Cells seen	Tv+ve	Non Reactive	Moderate
					AT	10200	56	42	2	12	22	10.6	84	Nil	Nil	Nil	Tv+ve	-	
35.	1390	Vasumathy 35/F	Mucopurulent discharge, Itching in vulva, low back pain, dysuria.	05.11.2012 to 12.12.2012	BT	9700	61	34	5	9	18	11.2	102	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	9200	58	40	2	11	26	10.8	110	Nil	Nil	Nil	Tv-ve	-	

36.	1378	Malliga 35/F	Excessive watery discharge, lower abdomen pain, low back pain.	05.11.2012 to 11.12.2012	BT	8200	53	39	8	12	26	8.6	92	Nil	Nil	Few pus Cells seen	Non-specific	Non Reactive	Good
					AT	8100	56	40	4	8	16	8.5	98	Nil	Nil	Nil	-	-	
37.	1376	Sumathi 24/F	Mucopurelnt discharge, itching in vulva, lower abdomen pain, low back pain, dysuria.	05.11.2012 to 11.12.2012	BT	8400	51	44	5	20	40	10	110	Nil	Nil	Nil	Tv+ve	Non Reactive	Good
					AT	8600	51	44	5	11	22	10.6	100	Nil	Nil	Nil	Tv-ve	-	
38.	1679	Ramani 35/F	Mucopurelnt discharge, itching in vulva, low back pain, dysuria.	06.11.2012 to 15.12.2012	BT	10000	56	38	6	12	24	10.8	110	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Good
					AT	10300	53	44	3	8	22	11	104	Nil	Nil	Nil	Tv-ve	-	
39.	1931	Sundari 35/F	Mucopurelnt discharge, itching in vulva, low back pain, dysuria.	07.11.2012 to 17.12.2012	BT	9200	52	42	6	14	28	11.6	110	Nil	Nil	Few pus Cells seen	Tv+ve	Non Reactive	Moderate
					AT	9600	52	45	3	12	26	11	100	Nil	Nil	Nil	Tv+ve	-	
40.	1933	Malathy 37/F	Excessive watery discharge, low back pain, lower abdomen pain.	07.11.2012 to 16.12.2012	BT	9200	52	40	8	15	34	10	96	Nil	Nil	Few pus Cells seen	Non-specific	Non Reactive	Good
					AT	9600	53	43	4	8	14	10.5	90	Nil	Nil	Nil	-	-	

ABBREVATION:

BT - Before Treatment
AT - After Treatment

TC – Total count
DC – Differential count
P – Polymorphs
L – Lymphocytes
E – eosinophil

ESR – Erythrocyte sedimentation rate
Hb – Haemoglobin
Al – Albumin
Sug – Sugar
Dep – Deposits
VDRL – Venereal disease research Laboratory.

Clinical assessment:

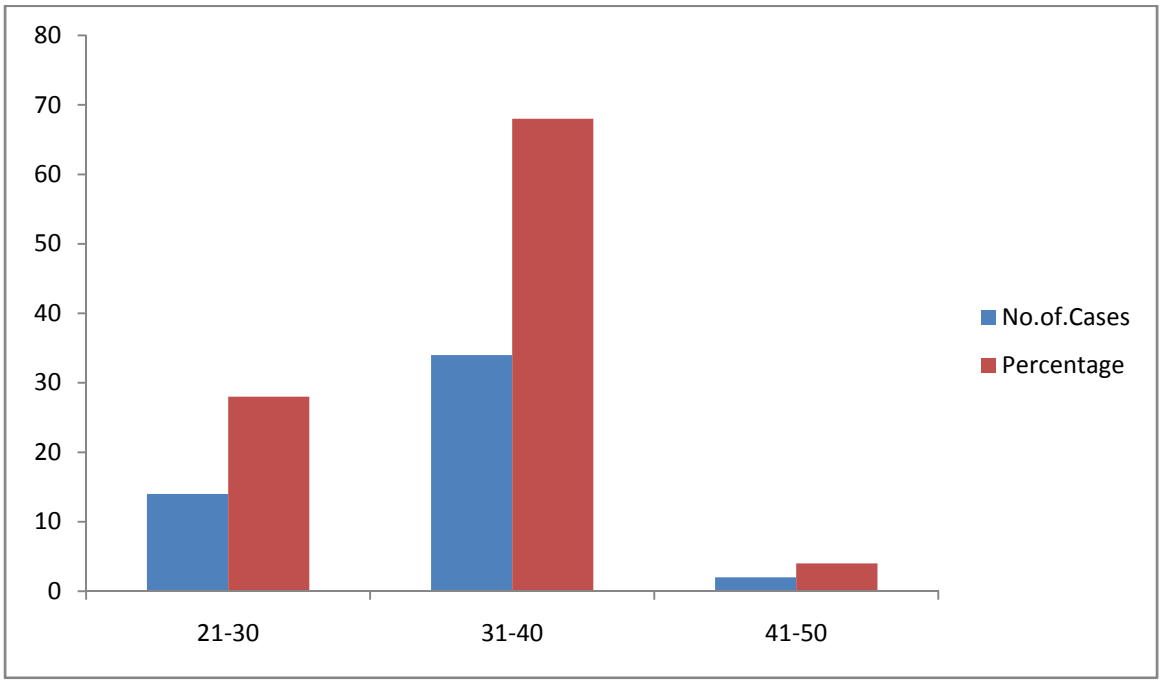
The observation regarding:

- Age variation
- Occupational status
- Socio economic status
- Signs and symptoms during admission

AGE DISTRIBUTION

Table No. : 4.4.1

Age group	No of cases	Percentage
21-30	14	28%
31-40	34	68%
41-50	2	4%



Inference:

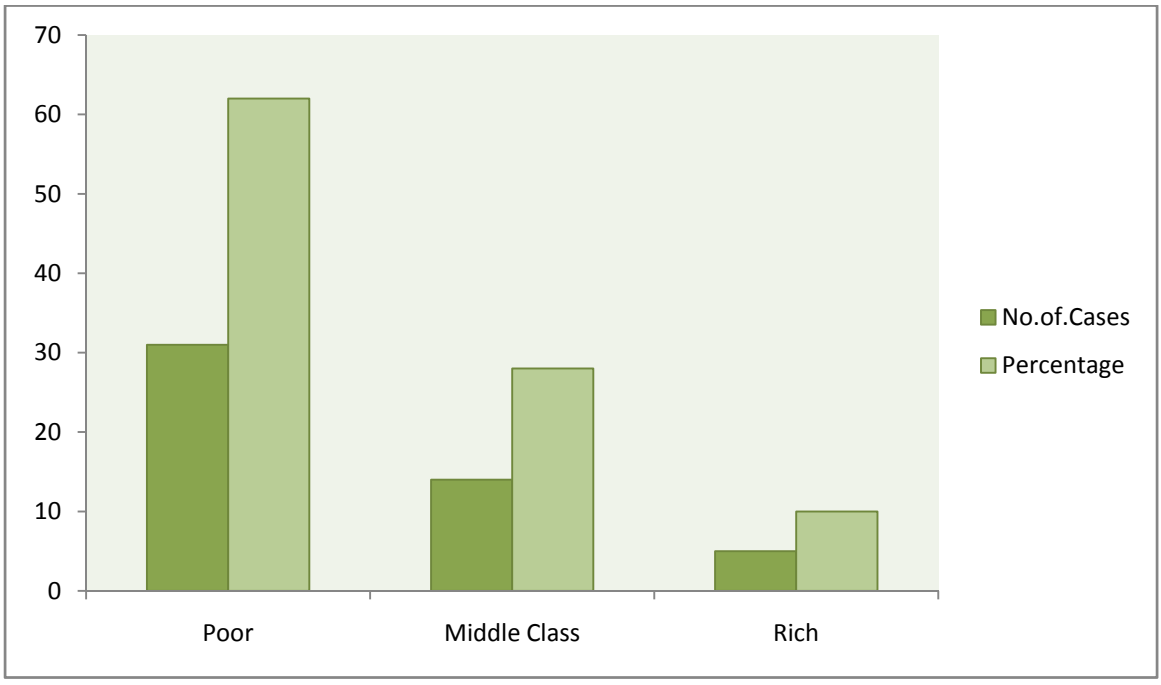
Among 50 patients,

- 28% of the patients belong to the age group 21-30
- 68% of the patients belong to the age group 31-40
- 4% of the patients belong to the age group 41-50

SOCIO ECONOMIC STATUS

Table No. : 4.4.2

Socio economic status	**No of cases**	**Percentage**
Poor	31	62%
Middle class	14	28%
Rich	5	10%



Inference:

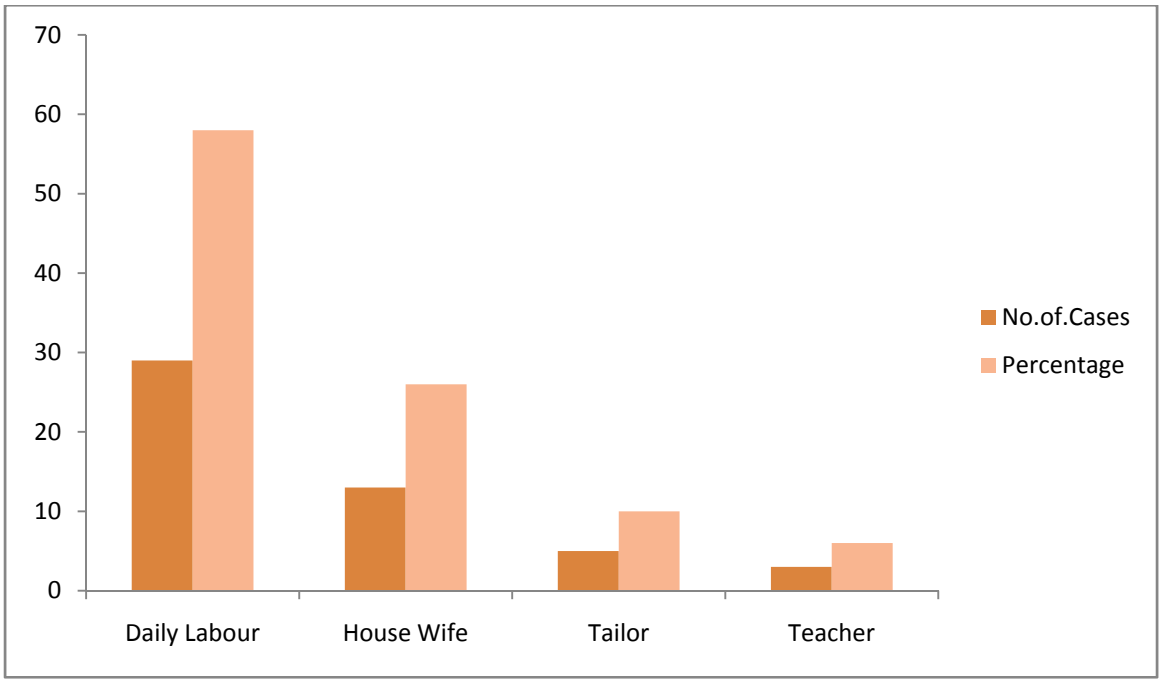
Among 50 patients,

- 62% of the patients belong to poor category
- 28% of the patients belong to middle class
- 10% of the patients belong to rich class.

OCCUPATIONAL STATUS

Table No. : 4.4.3

Occupation	No of cases	Percentage
Daily labour	29	58%
House wife	13	26%
Tailor	5	10%
Teacher	3	6%



Inference:

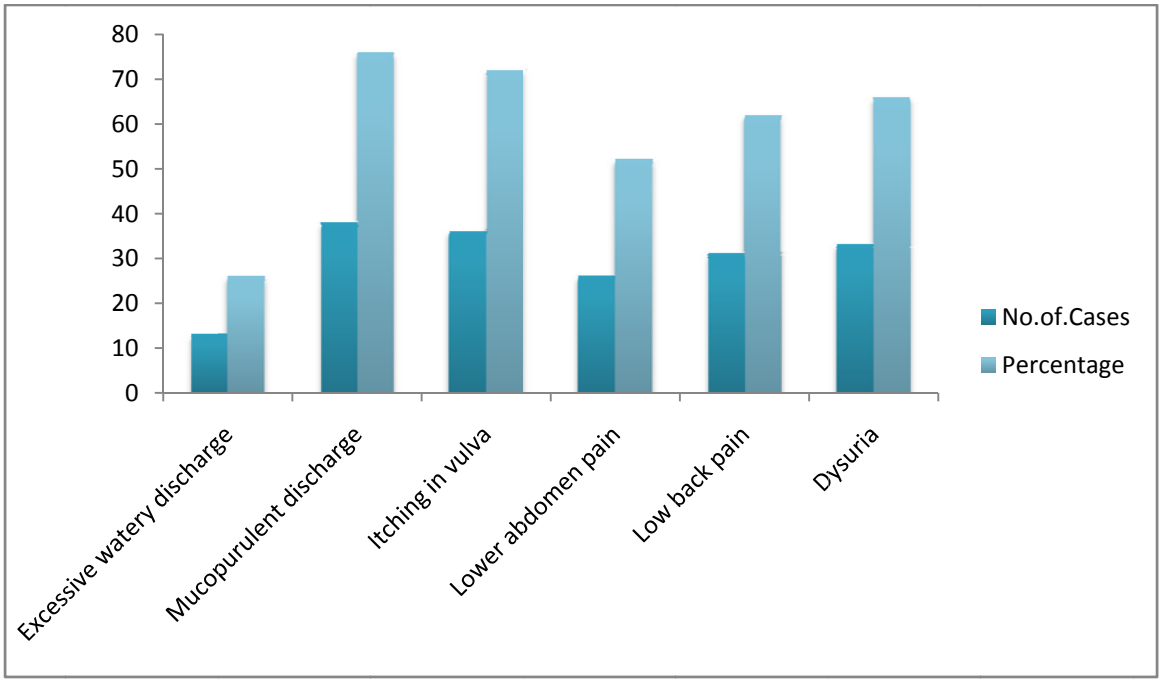
Among 50 patients,

- 58% of the patients were Daily labour.
- 26% of the patients were House wife.
- 10% of the patients were Tailor.
- 6% of the patients were Teacher.

SIGNS & SYMPTOMS DURING ADMISSION

Table No. : 4.4.4

Signs & Symptoms	No of cases	Percentage
Excessive watery discharge	13	26%
Mucopurulent discharge	38	76%
Itching in Vulva	36	72%
Lower abdomen pain	26	52%
Low back pain	31	62%
Dysuria	33	66%



Inference:

Among 50 patients,

- 26% had Excessive watery discharge.
- 76% had Mucopurulent discharge.
- 72% had Itching in Vulva.
- 52% had Lower abdomen pain.
- 62% had Low back pain.
- 66% had Dysuria.

5. RESULTS AND DISCUSSION:

The word drug itself comes from the Swedish word "drug", which means "dried plant". Dried Root powder of *Bombax ceiba*, (*Ilavu Ver chooranam)* was taken for its anti – microbial activity. This tree is widely distributed to through out the world.This root contains rich phytochemicals and abundantly in quantity in root buttresses. So availability of this drug always meets the demands for the treatment for the whole year. Here, various studies have been carried out in this study drug. The study includes literary collections, Pharmacognostic study, physico and Phyto chemical analysis, toxicological study, pharmacological study, and clinical study. The drug has been selected for the treatment of *Leucorrhoea* in reference with *GUNAPADAM MOOLIGAI VAGUPPU.*

Literary collections about the drug from various text books were done. It indicates the efficacy of the drug in the treatment of Peptic ulcer **.**Botanical aspect deals with the identification description, cultivation and ethno medicinal importance of the plant. *Gunapadam* aspect expressed that the drug possess good anti mirobial property.

4.2.1. Pharmacognostic aspect of *Bombax ceiba :*

Root of *bombax ceiba:*

The root is 4.5 mm thick. It is circular in outline with dark outer zone, wide secondary phloem and thick vascular cylinder (Fig 4.2.1.1). The outer most part of the root consists of uniformly thick and continuous periderm. It is 100 µm thick (Fig4.2.1.2, 4.2.1.5). The periderm cells are dark and compressed. They are tabular in shape and are subcrized. The epidermal layer is broken and obliterated. The cortical zone is not evident. The vascular cylinder includes thick secondary phloem cylinder and central thick, solid and dense xylem cylinder.

The secondary phloem is differentiated into outer, wider zone of collapsed phloem and inner, narrow non-collapsed phloem. The collapsed phloem consists of very wide, funnel shaped, dilated rays and prominent, conical, segments of phloem fibers and sieve elements (Fig 4.2.1.2). The dilated rays consists of thin walled, square shaped cells arranged in tangential bands. The conical phloem segments have several, tangential blocks of fibers alternating with crushed several elements which appear as dark tangential lines (Fig 4.2.1.4).The non-collapsed phloem is narrow and has no fiber bands.It consist of narrow, non-collopsed phloem rays ,sieve elements and parenchyma cells.The cells are in parallel lines.secondary xylem consists of fairly wide, undilated rays and several,radial lines of solitary vessels and xylem fibers. The vessels are circular and thin walled.The vessels in centre are narrow and those towards the periphery are wider.The diameter of the vessels range from 40-200 μm (Fig 4.2.1.2,4.2.1.3 & 4.2.1.7).

The phloem fibers and vessels elements and xylem fibers have lignified walls (Fig 4.2.1.6).The primary xylem strands are endarch with exarch protoxylem strands (Fig 4.2.1.3).

Legend for the figures :Bombax ceiba.

Fig 4.2.1.1. T,S. of Root – Entire view

4.2.1.2 T,S. of Root –A sector enlarged showing periderm,secondary phloem & a part of the secondary xylem.(cPh – collapsed phloem ,NCPH –Non –collopsed phloem,pe-periderm,PhF-phloem fiber,Sx –secondary xylem,ve-vessels)

Fig 4.2.1.5 periderm zone- Enlarged.

4.2.1.4 Secondary phloem showing Non-collapsed and collapsed phloem. (cPh- collapsed phloem, NCPh- Non- collapsed phloem, pe-periderm, PhF- phloem Fiber).

Fig 4.2.1.3, Secondary xylem showing thin walled, wide, angular vessels of thick walled fiber. (PX-Proto xylem, ve- vessels, XF-Xylem Fibers, XR-Xylem Ray)

Fig 4.2.1.7, vessels &Fibers-Enlarged.

4.2.1.6 Secondary phloem and secondary xylem viewed under polarized light to show the lignified cell walls (PhF- Phloem Fiber, SPh- Secondary Phloem, SX-Secondary Xylum, Ve- Vessels, XF-Xylum Fiber).

\ Fig 4.2.1.1 T.S of root-Entire view

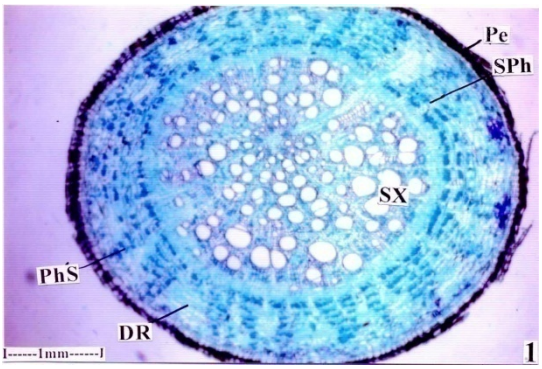


Fig 4.2.1.2 T.S of root- Enlarged section

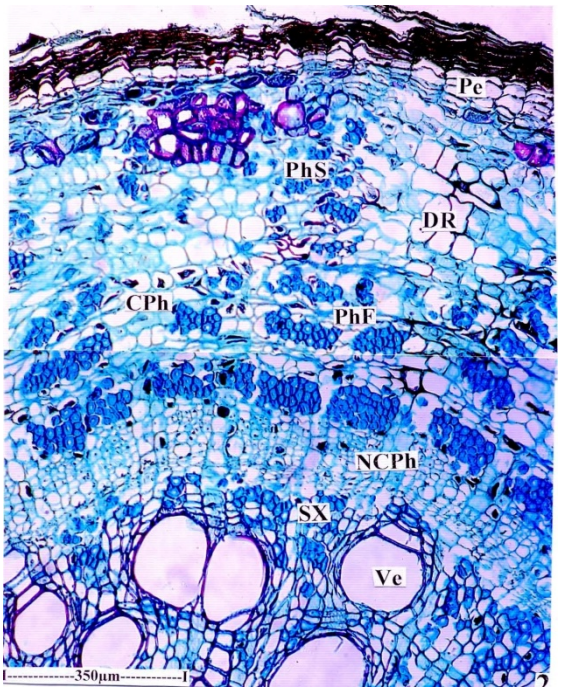
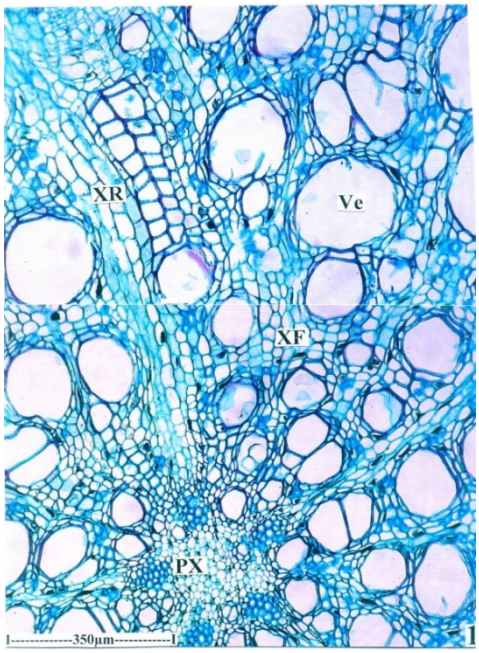


Fig 4.2.1.3 Secondary xylem



.Fig 4.2.1.4 Secondary phloem

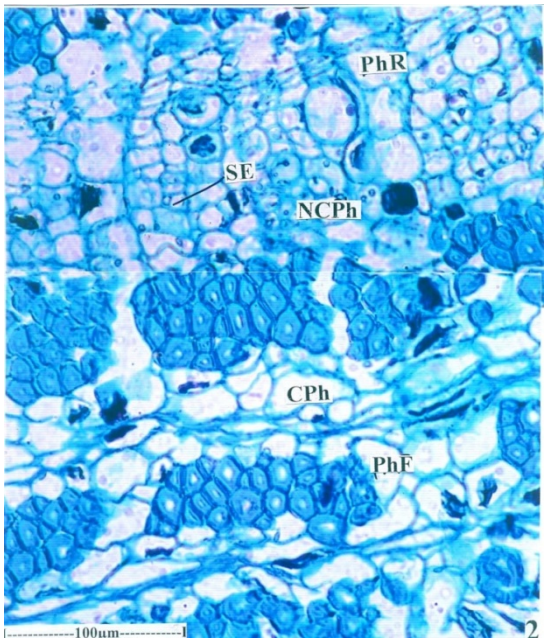


Fig4.2.1.5 Periderm zone

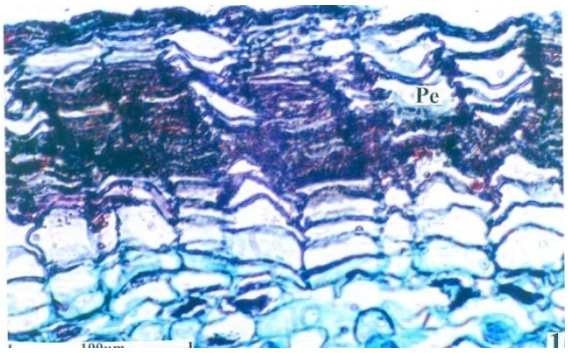


Fig 4.2.1.6 Secondary phloem & Secondary xylum

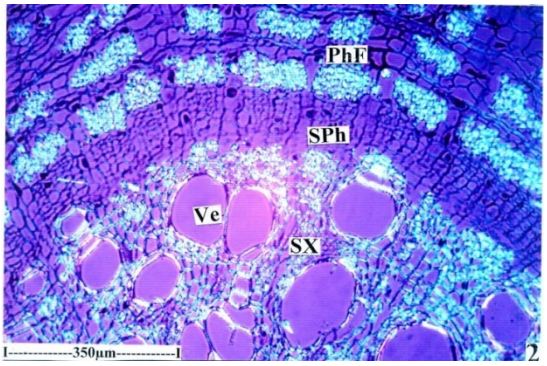
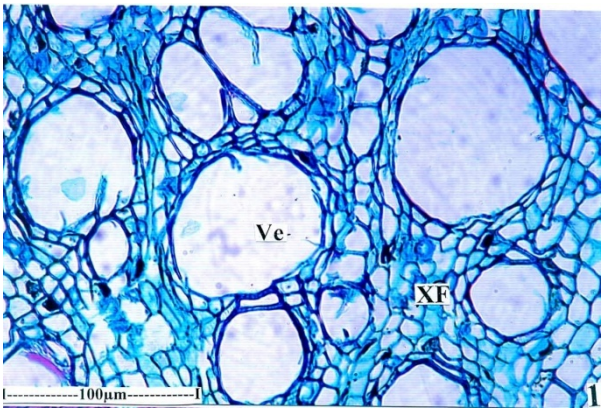


Fig 4.2.1.7 Vessels & Fibers



4.2.2. Physico-chemical analysis:

REPORT OF *ILAVU VER CHOORANAM*

Table : 4.2.2.1

S.No	Parameter	Mean Value
1.	Loss on Drying at 105°C	7.202 %
2.	Total Ash	7.577 %
3.	Acid insoluble Ash	1.026 %
4.	Water Soluble Extractive	9.1 %
5.	Alcohol Soluble Extractive	8.4 %
6.	Particle size	Sieve no 44
7.	pH	6.5

Discussion :

The analytical parameters like that of ash value, loss on drying values, acid insoluble ash values were within limits. These mean values are useful us to interpret the digestion and solubility capacity of the crude extract. As per the results the tested sample contains good percentage of solubility and also digestive capacity.It also indicates the purity of the sample.

PH analysis :

Optimum pH for growth of Candida albicans is 4 – 5. Since my drug have Ph of 6.5. The increasing Ph value is more beneficial effect against Candida albicans.

4.2.2.2 TLC Estimation of Ilavu Ver *chooranam:*

Figure No.4.2.2.2

After spray with visualizing agent

Table : 4.2.2.2

Sl.No	After Dipping in Vanillin-Sulphuric acid	
	Rf value	**Colour of the spot**
1	0.04	Purple
2	0.20	Grey
3	0.32	Grey
4	0.39	Grey
5	0.43	Yellow
6	0.47	Grey
7	0.56	Grey
8	0.65	Yellow
11	0.71	Purple
12	0.76	Purple
13	0.84	Green
14	0.89	Pale Blue

Thin Layer Chromotography is utilised for accurate identification and adulterant of the plant drug.. Identification was effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. The visual comparison of the size and intensity of the spots supported in semi-quantitative estimation of plant.

Standardization of drugs aids in confirmation of identity and determination of quality, effectiveness of *Ilavu Ver.*

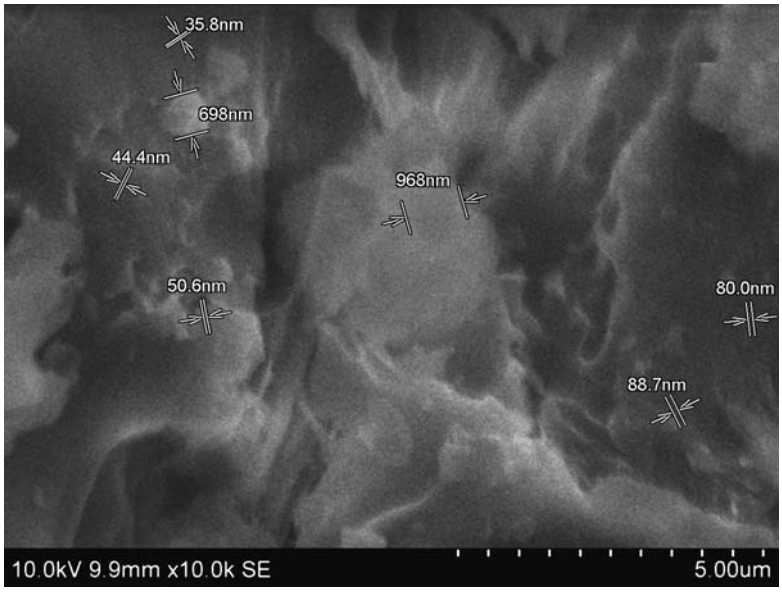
4.2.2. 3 Fourier transform infrared spectroscopy (Ftir) :

Ftir results of *Ilavu Ver chooranam*

3408.9 cm^{-1}	-	Monomeric -- Alcohols, Phenols (O – H stretching) Hydrogen-bonded -- Alcohols, Phenols
2930.8 cm^{-1}	-	Alkyl (C-H stretching)
2344.9 cm^{-1}	-	Alkyl (C-H stretching)
2138.3 cm^{-1}	-	Carboxylic acids (O-H stretching)
1636 cm^{-1}	-	Amines (N-H stretching)
1438 cm^{-1}	-	Alkanes (C-H stretching)
1249.9 cm^{-1}	-	Nitro Compounds (NO_2 stretching)
1159.2 cm^{-1}	-	Alcohols, Ethers, Carboxylic acids, Esters (C – O stretching)
1030.7 cm^{-1}	-	Amines (C – N stretching)

4.2.2.4. Scanning electron microscope (sem):

Figure no 4.2.2.4



Results:

SEM picture shows Nano particle (Micro level) size of the sample.

Physical properties of known elements and materials can change as their surface to area ratio is dramatically increased, i.e. when nanoscale sizes are achieved. These changes do not take place when going from macro to micro scale. Changes in physical properties such as colloidal properties, solubility and catalytic capacity have been found very useful in areas of bioremediation and drug delivery. The extremely small size of nanoparticles allows them to penetrate cells and interact with cellular molecules. Due to nanoparticle size a low dose of the drug can cure the diseases.

4.2.3. Qualitative phytochemical analysis:

Results and discussion

Table : 4.2.3

Qualitative Phytochemical Tests		
1.	Alkaloids	- ve
2.	Flavonoids	+ ve
3.	Triterpenes	+ ve
4.	Steroids	+ ve
5.	Phenol	+ ve
6.	Tannin	+ ve
7.	Saponin	+ ve

The qualitative analysis on phyto chemical substance on *Ilavu Ver*. Shows presence of **Flavonoids**, **Triterpenoids**, **Steroids, Phenol, Tannin and saponin.**

- Flavanoids have anti microbial activity (T.P.Tim cushnie – 2005)
- Triterpenoids have anti microbial activity (C. Mutai – 2009)
- Phenol have anti microbial (S.O. Salawu – 2011)
- Tannin have anti microbial (Min B.R – 2008)
- Saponin have anti microbial (Soetan K.O – 2006)
- Principle action of Tannin through an astringent effect on Protein, Coagulating it to form an insoluble protective membrane on the mucus membrane and inhibits secretary. Processes in the mucus membrane. Astringent contracts organic tissue thus lessening secretion.
- Tannin decreasing vaginal mucous discharge (Harvey wickes felter,1898)
- The synergistic effects of ellagitannins with antibiotics against antibiotic-resistant bacteria. is one of the most noticeable antimicrobial activity fo tannins. Corilagin and tellimagrandin I markedly potentiated the activity of B-Lactams against methicillin-resistant staphylococcus aureus. Potent anti-human immune deficienty virus (HIV) activities were found for the dimeric ellagitannins oenotheins, coriariin a and argimoniin. (Molecules 2011).
- Antimicrobial activity of Tannin against multidrug resistant strains fo Escherichia coli, Klebsiella Pneumoniae, Candia albicans and ATCC strains of streptococcus mutans, staphylococcus aureus, streptococcus bovis, salmonella typhimurium. (Johnson M et,al 2012).

4.2.4 Chemical Analysis of *Ilavu ver chooranam :*

The bio-chemical analysis of *Ilavu Ver chooranam* showed the following chemicals, Chloride, Iron, Tannin, Zinc and Potassium present.

- Zinc have anti- bacterial activity (Muhammad Idrees Zaidi et,al.,2012)
- Zinc is very important roll on genital infection (M.S. Cosmell et, al., 1987)
- Potassium prevents of female disorders by stimulating hormones.

4.3. PHARMACOLOGICAL STUDY:

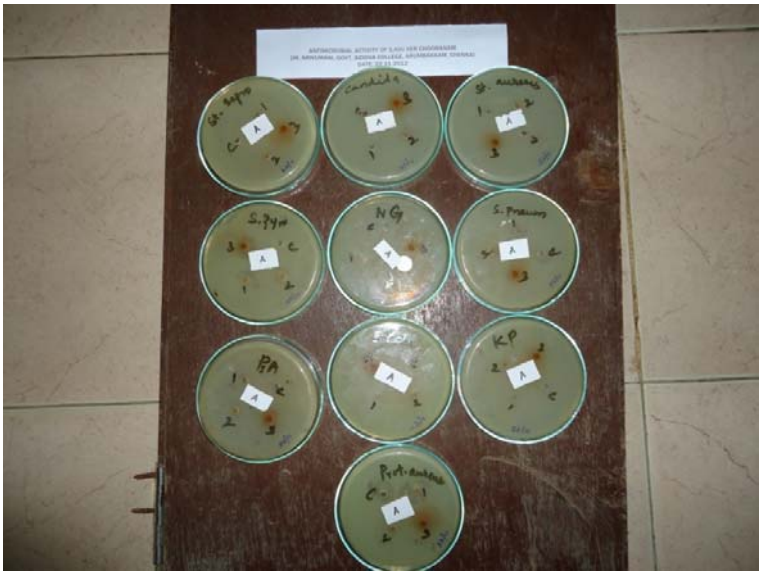
ANTIMICROBIAL PROPERTY OF *ILAVU VER CHOORANAM*

Results and discussion:

Conclusion:

The antibacterial and antifungal activity of Ilavu Ver Chooranam was tested. For the Ilavu Ver Chooranam, the maximum inhibition zone was observed for the fungal Candida 10mm at the concentration of 100µg/ml.

Figure no :4.3



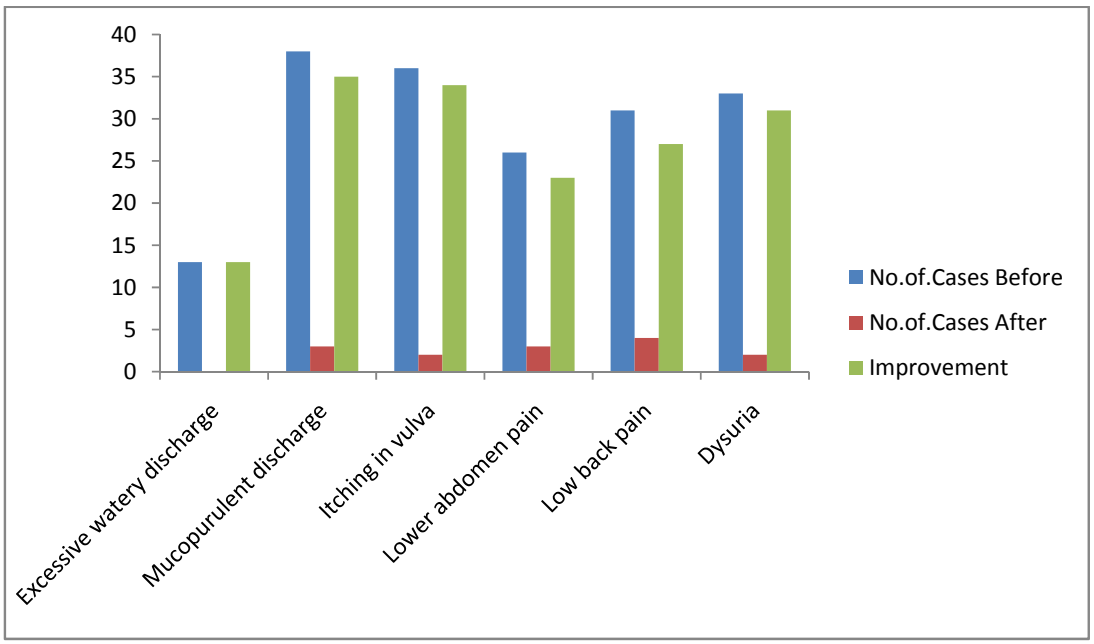
Anti –microbial activity

4.4. CLINICAL ASSESMENT

IMPROVEMENT SHOWING SIGNS & SYMPTOMS BEFORE AND AFTER TREATMENT

Table : 4.4.5

Signs & Symptoms	**No of cases Before**	**No of cases After**	**Improvement**	**Percentatage**
Excessive watery discharge	13	0	13	100%
Mucopurulent discharge	38	3	35	92%
Itching in Vulva	36	2	34	94%
Lower abdomen pain	26	3	23	89%
Low back pain	31	4	27	87%
Dysuria	33	2	31	93%



Inference:

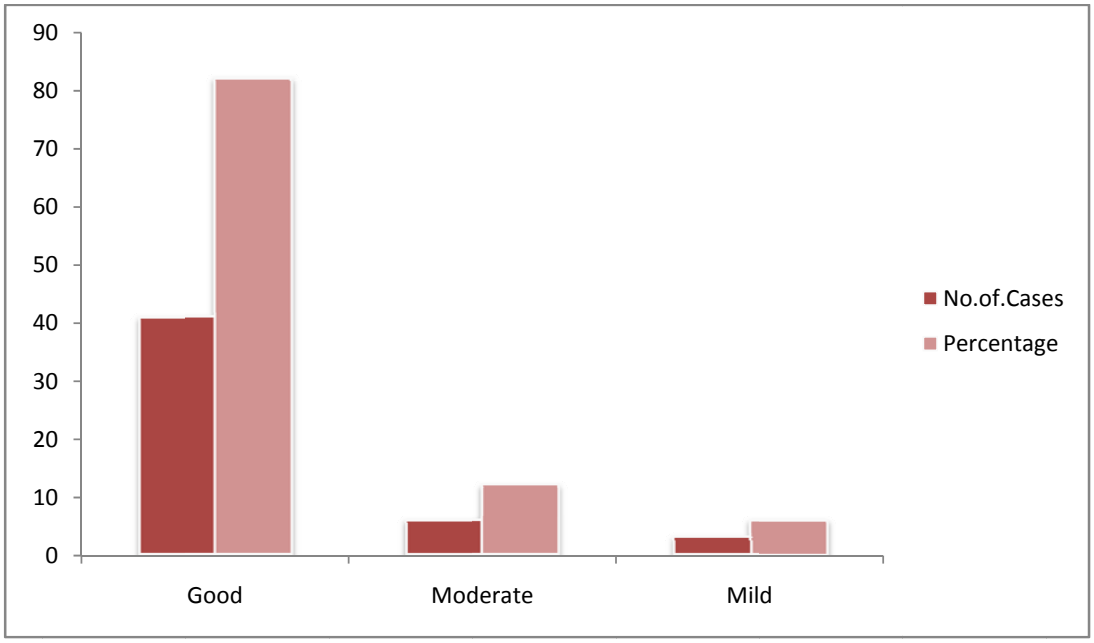
Among 50 patients,

- 100% of the patients were relieved from Excessive watery discharge.
- 92% of the patients were relieved from mucopurulent discharge.
- 94% of the patients were relieved from Itching in vulva.
- 89% of the patients were relieved from lower abcomen pain.
- 87% of the patients were relieved from low back pain.
- 93% of the patients were relieved from Dysuria.

GRADATION OF RESULT

Table :4.4.6

Result	No of cases	Percentage
Good	41	82%
Moderate	6	12%
Mild	3	6%



Inference:

Among 50 patients,

- 82% of the patients showed Good result.
- 12% of the patients showed moderate result.
- 6% of the patients showed mild result.

DESCRIPTIVE STATISTICAL FOR IMPROVEMENT OF SIGNS & SYMPTOMS IN *VELLAI NOI*

Paired t test calculater :

P value and statistical significance:

The two-tailed P value equals 0.0117

By conventional criteria, this difference is considered to be statistically significant.

Confidence interval:

The mean of Group One minus Group Two equals 1.00

95% confidence interval of this difference: From 0.34 to 1.66

Intermediate values used in calculations:

t = 3.8730

df = 5

standard error of difference = 0.258

Table : 4.4.7

Treatment	Signs & Symptoms	Mean	SD	S.E.M.
Before	6	29.50	9.09	3.71
After	6	28.50	8.55	3.49

From the table we calculated the descriptive statistic like Mean, S.D & S.E.M of mean for the improvement score before and after treatment.

't' Table : 4.4.8

t-table	SD	S.E.M	't' value	p value
Pre Vs post	5	0.258	3.8730	0.0117

The two tailed "p' value equals by conventional criteria, this difference is considered to very statistically significant.

Result :

From the above table we got a significant difference ($p<0.05$). There was significant improvement in the symptoms like excessive watery discharge, mucopurulent discharge, itching in vulva, lower abdominal pain, low back pain, dysuria etc. So we conclude that there is an improvement between before and after treatment.

6. CONCLUSION

The Siddha drug "*Ilavu ver chooranam*" was tested for its efficacy in the management of *vellai noi* in this study.

The model and study design demonstrates the feasibility of evaluating powdered form of *Bombax ceiba* (*Ilavu Ver chooranam*) in the management of Leucorrhoea (*Vellai noi)*

The literature reviews along with phytochemical, chemical constituent's aids in justification of drug.Standardisation of tested drug through various physico chemical analysis and pharmacognostic study for quality and acceptability of drug.

The availability, collection and preparation of the drug is easy and also economical.

Presence of of flavanoids, Triterpinoids, Steroids, Phenols, Tannin, Saponin. helps in treating leucorrhoea because of these promote anti – microbial activity.

Tannin is powerful astringent. So acts on vaginal mucous membrane thus decreasing discharge and also occur anti-microbial activity.

The trial drug was subjected to pharmacological, clinical studies were analysed and revealed that the trial drug has potent Anti microbial activity.

The antibacterial and antifungal activity of *Ilavu Ver Chooranam* was tested. For the *Ilavu Ver Chooranam*, the maximum inhibition zone was observed for the fungal Candida 10mm at the concentration of 100µg/ml.

The clinical study showed improvement in the symptoms like excessive watery discharge, mucopurulent discharge, itching in vulva, lower abdominal pain, low back pain, dysuria etc. The results were found to be good in 82% of patients, moderate in 12% of patients and mild in 6% of patients. . Statistical analysis shows p value < 0.05 which is considered very statistically significant.

All the above studies have proved that the trial drug Ilavu ver has potent Anti-microbial activity and also effective in the treatment of *Vellai.*

7.SUMMARY

The herb *Ilavu Ver* was collected from Varasa naadu, Theni (Dt) and purified then powered and stored. This drug was subjected to various studies by the author.

Ilavu Ver Chooranam was selected for this study to evaluate the Anti – microbial activity, and to prove its efficacy and safety in Leucorrhoea.

The trial drug has got more literature evidence for its efficacy in the Leucorrhoea.

The Ilavu Ver chooranam was subjected to various process of investigations like pharmacognostic study phytochemical, chemical and physio-chemical analysis to report the creditability of drug

The pharmacological analysis showed that the drug has got significant Anti microbial activity.

The clinical study showed improvement in the symptoms like excessive watery discharge, mucopurulent discharge, itching in vulva, lower abdominal pain, low back pain, dysuria etc. The results were found to be good in 82% of patients, moderate in 10% of patients and mild in 8% of patients.

Bombax ceiba (*Ilavu Ver chooranam*) will be significantly safe and highly effective for Leucorrhoea *(Vellai noi*).

1.INTRODUCTION

Siddha system of science is the most effective, valuable system for the human beings in all occasions without any side effects.

Siddhars goal is spiritual and holistic approach. This art comprises the four main branches vaadham, vaithyam, yogam and gnanam. According to these branches the service to humanity is not only preventive and treatment but also the way of longevity and better life style.

Nowadays WHO says that the definition for health is physical, mental, social well being. But our *siddhars* know the art of better well being through *kayakarpam.*

In Siddha aspect :

Classification of disease based upon :

Causes, Symptoms, Treatment method

Diagnosis of disease based upon ;

Naadi, Envagaithervu, Neer kuri, Nei kuri

Treatment is based upon 5 properties of the drugs :

*Suvai (*Taste), *Gunam* (character),*Veeriyam* (Potency),

Privu (Class),*Mahimai* (Action).

Siddhars classified the total diseases in human body according to the literature "*Agathiyar rathina churukka naadi*" as 4448 diseases.

Gunmam is 8 types under these classification. The aetiology, types and clinical features of *gunmam* are mentioned in "*Yugi chinthamani*".

Gunmam as explained by great *siddhars,* has clinical symptoms as like that of acid peptic disorders (APD).

Peptic ulcer is one of the most important gastro intestinal disorder. It is caused by irregular food habits, NSAIDS, helicobacter pylori, infection, chronic alcohol consumption, smoking, anxiety, emotional stress.

It occurs by a lack of equilibirium between the gastric destruction factors (Acid, Pepsin) and the protective factors (Mucus and Bicarbonate).

In modern world gastro intestinal disorders are the universal problem. Because people are getting too much stress in the modern life style and they are also eating fast foods which contains spices and preservatives.

10% of the population will some time during life develop peptic ulcer disease. It is common among women 9.5% as among men 10.5% . Duodenal ulcer are most frequent individuals 30 to 55 years of age. In the general population 20-50% are infected with H. pylori, the prevalence increases with age. 15-20% of the infected individuals will develop peptic ulcer.

Chronic peptic ulcer leads to haematemesis and malaena, pyloric stenosis, perforation, perigastric adhesion, subdiaphragmatic abscess, pancreatitis, gastro-colic fistula.

So I have decided to choose one of the most important "Gastro intestinal disorder" as my dissertation topic "*Gunmam"* .

Anti ulcer drugs act by Histamin H2 receptor antagonist, Proton pump inhibitors, 5-HT4 receptor agonist, cyto protectant, Healing agents. The advers effects of these drugs are cardiac arrhythmias, Blood dyscrasias, CNS & GI disturbances, Gynaecomastia, Impairment of sexual drive, Granulocytopenia, Nephritis, Hepatitis, Pancreatitis, Increased liver enzyme activity and triglycerides, Reduction in leucocytes and thrombocytes, cell hyperplasia,Pharyngitis, Rhinitis, Pruritis, GIT infection, Water and sodium retention, Potassium depletion, Hypertension, Mental confusio(Pharmacology and pharmacotherapeutics, R.S.Satoskar 22 edition). So the author has decided to take the herbo- minerel formulation of "hingu chooranam". Since it will be less toxic and will not produce the adverse effects like the modern medicines.

In the siddha literature "*Sarabentherar vaithya muraigal-Gunmaroga sigichai*" the compound medicine "*Hingu chooranam*" is indicated for *Gunmam.*so this compound drug has been selected to the dissertation work in treating the disease Peptic ulcer.

Hingu chooranam is a compound drug which contains 8 drugs. In the siddha literature "*Gunapadam mooligai* and *Thaathu vaguppu*" all drugs are indicated for *Gunmam.* That is Sodium chloride impure and Plambago zylanica indicated for *Atta gunmam*. Ferula asafoitida, Cuminum cyminum, Acorus calamus, Zingiber officinale and Terminalia chebula are indicated for *Gunmam*. costus specious indicated for *viranam*.

So *Hingu chooranam* is most effective for peptic ulcer. If the people is healthy, they will give our best for the development of society, nation and world.

2. AIM AND OBJECTIVES

AIM:

In the siddha pharmacopeia, the *siddhars* have used 4 types of crude drugs which is crude drugs of plant origin, animal origin, mineral origin and metal origin for preparing medicines. Thease crude drugs are used for preparing compound medicine.

Hingu chooranam is a compound medicine which contains 8 drugs. In the siddha literature " *Gunapadam mooligai and thathu vaguppu*" all drugs are indicated for *Gunmam*, that is Sodium chloride impure and *Plumbago zyelanica* indicated for *atta gunmam*. *Ferula asafetida, Cuminum cyminum, Acorus calamus, Zingiber officinale* and *Terminalia chebula* are indicated for *gunmam*. *Costus specious* indicated for *viranam*. So *hingu chooranam* is most effective for peptic ulcer.Currently cost effective and less toxicity medicine for peptic ulcer.

The ultimate aim of my dissertation work is to prove the **ANTI – ULCER ACTIVITY** of ***Hingu chooranam***

OBJECTIVES

In this dissertation work, the "***Hingu chooranam"*** is analyzed to assess the following aspects:

- Collecting the literature evidences related to the trail drug
- Getting the proper authentication of Raw drugs
- Preparation of the trial drug, according to the text in a sasthrik manner
- Physico-chemical, Chemical Analysis for the trial drug to identify the active components.
- Toxicological studies to prove the safety of the drug.
- Pharmacological study to evaluate the Anti ulcer activity of the drug
- Clinical studies Evaluating the therapeutic efficacy of *HINGU CHOORANAM* through open clinical trial on *GUNMAM* patients

3. REVIEW OF LITERATURE

3.1 Botanical aspect :

Bentham & Hooker's classification:

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Rosidae
Order	Apiales
Family	Apiaceae
Genus	*Cuminum* L.
Species	*Cuminum cyminum* L.

Vernacular names:

Tamil	-	Seeragam, Pithanasini, Posanakudori, Asai, Meththium
English	-	Cumin seeds or fruits
Sanskrit	-	Jirakams
Hindi	-	Zira
Kanadam	-	Jirlga
Malayalam	-	Jirakam
Telugu	-	Jilakarra

Actions:

Carminative, Stimulant, Stomachic, Astringent

Chemical constituents:

The chief constituent of the volatile oil is cumaldehyde, the iol contains p-cymene, pinene, dipentene, cumene, cuminic alcohol, β-phellandrene and α-terpeneol.

3.2 Gunapadam aspect :

Part used:

Seed

Taste (*Suvai*):

Acrid, Sweet

Character (*Thanmai):*

Thatpam

Classification (*Pirivu*):

Inippu

Gunam :

வாந்தி யருசிகுன்மம் வாய்நோய்பீ லிகமிரரைப்

பேற்றீருமல் கல்லடைப்பி லாஞ்சனமுட் – சேர்ந்தகம்மல்

ஆசனகு டாரியெனும் அந்தக் கிரகணீயும்

போசனகு டாரியுண்ணப் போம்.

தேரையர் குணவாகடம்

வாந்தி, **சுவையின்மை**, **குன்மம்**, **வாய் நோய்**, **பீலிக நோய்**, **இரைப்பிருமல்**, **கல்லடைப்பு**, **கிரகணீ திரும்**.

Medicinal uses :

- Cumin seeds are dried and powdered and take with butter for Erigunmam
- Cumin seeds, cardamom, borneo camphor these are take each 1part and add 3 parts of sugar, then made into chooranam for mandha vayu
- For getting good appetizing, it is added food.

3.1. *Acorus calamus :*

Bentham & Hooker's classification:

Kingdom	-	Plantae
Subkingdom	-	Tracheobionta
Superdivision	-	Spermatophyta
Division	-	Magnoliophyta
Class	-	Liliopsida
Subclass	-	Arecidae
Order	-	Arales
Family	-	Acoraceae
Genus	-	*Acorus* L.
Species	-	*Acorus calamus* L.

Vernacular names:

Tamil	-	Vasambu, Pillai marunthu, Vasai, Ukkiram
English	-	Sweet-flag
Sanskrit	-	Vacha
Hindi	-	Bach
Kanadam	-	Baja
Malayalam	-	Vayamba
Telugu	-	Vasa

Actions:

Carminative, Anti-spasmodic, Anti- periodic, Anti-bacterial, Stimulant, Sedative, Disinfectant, Germicide, Analgesic, Stomachic, Nauseant, Emetic, Tonic.

Chemical constituents:

Calamenol, calamene, calamenone, methyl eugenol, eugenol, α-pinene and camphene, palmitic, hepatic and butyric acids, asaronaldehyde, calamol, calamine, azulene, acorone, calerene, calacone, calacorene, acorenone, acolamone, isoacolamone, acoragermacrone, isoacolamone, preisocalamendiol, caryophyllene, calamenene, adalene and humulene.

3.2. Gunapadam aspect :

Part used:

Root

Taste (*Suvai)*:

Acrid

Character(*Thanmai)*:

Veppam

Classification(*Pirivu)*:

Kaarppu

Gunam :

பாம்பாதி நஞ்சற் புதப்புண் வலிவிடபாகங் குன்மம்

சூம்பா ரிரத்தபித் தம்முக நாற்றம்வன் சூலைசன்னி

வீம்பம்பை காசம் பிலிகஞ் சிலிபதம் வீரீருமல்

தாம்பாங் கிருமி யிவையேகு மாசிவ சம்பினையே.

தேரையர் குணவாகடம்

வசம்பினால் எல்லா நஞ்சுகள், **புண் வகைகள்**, **ஐவகைவலி**, **குன்மம்**, **இரத்த பித்தம்**, **வாய்நாற்றம்**, **சூலை**, **முப்பிணீ**, **இருமல்**, **ஈரல் நோய்**, **யானைக்கால்**, **நாடாப்புழு தீரும்**.

Medicinal uses :

- Sweet flag powder mixed with honey for indigestion, flatulence, diarrhoea, gaseous accumulation in the stomach.
- Sweet flag, glycyrrhiza glabra both equal quantity made it into decoction for cough, fever, abdominal pain especially in children.
- A piece of sweet flag put it into mouth then chew it for a time. It increases the salivary secretion there by inducing good digestion.

3.1.*zingiber officinale:*

Bentham & Hooker's classification:

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Zingiberidae
Order	Zingiberales
Family	Zingiberaceae
Genus	*Zingiber*
Species	*Zingiber officinale*

Vernacular names:

Tamil	-	Chukku,Sundi, Aarthrakam, Nakaram, Verkkombu
English	-	Dried ginger
Sanskrit	-	Nagaram
Hindi	-	Sonth
Kanadam	-	Ona-shunti or sunthi
Malayalam	-	Chukku
Telugu	-	Sonti
Arab & Per	-	Znagebilarataba

Actions:

Carminative, stomachic stimulant

Chemical constituents:

Zingiberol, gingerol, oleoresin, zingerone, oil contains sesquiterpene hydrocarbons, sesquiterpene alcohols, monoterpenoids and associated compounds. Sesquiterpenes present in the oil are ar-curcumene, farnesene and smaller amounts of β-bisabolene, α-selinene, β –elemence and β –sesquiphellandrene.

3.2. Gunapadam aspect :

Part used:

Rhizome (Dry)

Taste (*Suvai):*

Acrid

Character *(Thanmai):*

Veppam

Classification *(Pirivu*):

Kaarpu

Gunam :

சூலைமந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை

மூலம் இரைப்பிருமல் மூக்குநீர் – வாலகப

தோடமதி சாரந் தொடர்வாத குன்மநீர்த்

தோடம்ஆ மம்போக்குஞ் சுக்கு.

அகத்தியர் குணவாகடம்

சுக்கினால் செரியமை, **மாரபெரிச்சல்**, **புளீயேப்பம்**, **வெப்பம்**, **இரைப்பு இருமல்**, **கழிச்சல்**, **நீரேற்றம்**, **குன்மம்**, **சூலை வலி**, **பாண்டு**, **ஐய சுரம் தீரும்**

Medicinal uses :

- Decoction of dried ginger 40- 80ml for indigestion, abdominal pain, vomiting, fever, flatulence.
- Dried ginger powder 2 -4 gm with ghee for diarrhoea, burning sensation,in epigastric region, indigestion.
- Dried ginger powder is taken with sugar cane juice in the morning time for burning sensation in the epigastric region.

3.1. *Terminalia chebula :*

Bentham & Hooker's classification :

Kingdom	-	Plantae.
Division	-	Magnoliophyta.
Class	-	Magnoliopsida.
Order	-	Myrtales.
Family	-	Combretaceae.
Genus	-	*Terminalia.*
Species	-	C*hebula* Rtz.

Vernacular names :

Tamil	-	Kadukkai,Amutham, Arithagi, Varikkai
English	-	Chebulic myrobalan
Sanskrit	-	Pathya, Bhishak priya, Haritaki
Hindi	-	Pile Hara
Kanadam	-	Anile-kayi, Alale-kayi
Malayalam	-	Katukkai
Telugu	-	Karak- kaya
Arab	-	Halila
Pers	-	Palilahe zard

Actions :

Chemical constituents :

Tannin (tannic acid) 45%, and a large amount of gallic acid, lucilage, a brownish yellow colouring matter, chebulinic and which when heated in water splits up into tannic and gallic acids.

3.2. Gunapadam aspect :

Part used:

Fruit

Taste (*Suvai):*

Astringent, Sweet, Sour, Bitter, Acrid

Character (*Thanmai):*

Veppam

Classification (*Pirivu):*

Inippu

பொதுப் பண்பு

காமாலை, **கண் நோய்கள்**, **இருமல்**, **குன்மம்**, **சோபை**, **ஈரல் நோய்கள்**, **குட்டம்**, **பெருவயிறூ**, **பாண்டு**, **மார்பு நோய்**, **மேகரோகம்**, **மூல ரோகம்**, **வாய்ப்புண்**, **வாந்தி**, **விரை வாதம்**, **வெண் குட்டம்**, **பவுத்திரம்**, **கிரந்தி தீரும்**.

Medicinal uses:

- Kadukkai vadagam 1 or 2 for peptic ulcer, vomiting, haemarrhoids, diarrhoea, anaemia.
- Pavana kadukkai for peptic ulcer, abdominal pain, vomiting, haemarrhoids, indigestion, anaemia.
- Kadukkai nei 10gm for eriyagni, indigestion, constipation, anaemia.

3.1. *Plumbago zeylanica :*

Bentham & Hooker's classification :

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Caryophyllidae
Order	Plumbaginales
Family	Plumbaginaceae
Genus	*Plumbago* L.
Species	*Plumbago zeylanica* L.

Vernacular names:

Tamil	-	Kodiveli, chithiramoolam
English	-	Ceylon lead-wort
Sanskrit	-	Angi-shika, Chitraka-vrikshaha
Hindi	-	Chita, Chitra
Kanadam	-	Chitra-mula
Malayalam	-	Tumpa-koduveli
Telugu	-	Tella-chitra-mulam, Agnimata

Actions :

Anti- periodic, Diaphoretic

Chemical constituents :

Plumbagin, glucose, fructose and enzymes protease and invertase. Root in stimulating digestive processes. The leaves and the stem contain volatile oil but little or no plumbagin.The flowers of the plant contain azulein (5-methoxy quercetin 3-rhamnosid) and 3-rhamnosides of delphinidin.

3.2 gunapadam aspect :

Part used :

Root

Taste (*Suvai);*

Acrid

Charecter *(Thanmai):*

Veppam

Classification *(Pirivu):*

Kaarpu

Gunam :

கட்டிவிர ணங்கிரந்தி கால்கள அரையாப்புக்

கட்டிச்சூ லைவீக்கங் காழ்மூலம்-முட்டிரத்தக்

கட்டுநீ ரேற்றங் கனத்த பெருவயிறூம்

அட்டுங் கொடிவேலி யாம்.

கட்டி, **புண்**, **வளிநோய்**, **அரையாப்புக்கட்டி**, **குத்தல்**,**சோபை**, **மூலரோகம்**, **நீரேற்றம்**, **பெரு வயிறூ தீரும்**.

Medicinal uses :

- Ceylon lead wort, mercury per chloride, carum capticum these are each 1 part and 3 parts of jiggery , then grind it all and make a tablet in the size of pepper for 8 types of gunmam, fistula.
- Ceylon lead wort root powder decoction has anti- periodic and diaphoretic action.

3.1. *Costus speciosus ;*

Bentham & Hooker's classification :

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Zingiberidae
Order	Zingiberales
Family	Costaceae
Genus	*Costus* L.
Species	*Costus speciosus* .

Vernacular names :

Tamil	-	Kottam, Kuraa, oli
English	-	Costus root
Sanskrit	-	Koshtam
Kanadam	-	Koshtam
Malayalam	-	Kottam
Telugu	-	Kostam
Arab	-	Qusth
Pers	-	Kosht

Actions :

Stomachic, Expectorant, Tonic, Stimulant, Diaphoretic

3.2. Gunapadam aspect :

Part used :

Root

Taste (*Suvai):*

Bitter

Character (*Thanmai)*:

Veppam

Classification (*Pirivu):*

Kaarpu

Gunam :

திட்டிகவுள் அகடுகளஞ் சென்னி நாவாய்

செறீபிணீவெப் பதைப்புதா வர்த்தம் ஊதை

முட்டியெழு மு விரணம் சுவாசகாசம்

மூடிகத்தோ டரவுமர விடங்கள்

தொலையும்விர ணாரிக்குச் சுகப்போறாமே.

கண், **தாடை**, **வயிறூ**, **கழுத்து**, **தலை**, **நா**, **வாய் இவ்விடத்திலுண்டாகும் நோய்கள்**, **சுரம்**, **அதைப்பு**, **வாயு**, **மூலமு** , **புண்**, **இரைப்பு**, **மேகக்கட்டி**, **பயித்தியம் தீரும்**.

Medicinal uses ;

- Costus root is added in gunma kudori mezhugu which in the effective drug in the treatment of peptic ulcer.
- Costus root is added in thaleesadhi chooranam which in the drug to treat digestive disorders.
- Costus root is added in drakshadhi chooranam which is treat for vomiting in peptic ulcer, pitha diseases.

3.1. *Ferula asafoetida :*

Bentham & Hooker's classification :

Kingdom	*Plantae*
Subkingdom	*Tracheobionta*
Superdivision	*Spermatophyta*
Division	*Magnoliophyta*
Class	*Magnoliopsida*
Subclass	*Rosidae*
Order	*Apiales*
Family	*Apiaceae*
Genus	*Ferula* L.
Species	*Ferula assa-foetida* L.

Vernacular names :

Tamil --------Perungayam, Iranam, Valleegam, Kanthi

English ------- Asafoetida

Sanskrit ------- Hingu

Hindi --------Hing

Kanadam ----- Ingu

Malayalam --- Perungayam

Telugu --- Inguva

Arab -----Hiltit

Pers ------ Angusthagandh

Actions :

Stimulant, Carminative, Anti-spasmodic, Expectorant, Laxative, Anthelmintic, Diuretic, Aphrodisiac, Emmenagogue.

Chemical constituents :

Organic sulpher compound; valatile oil containing essential oil of garlic-allyl, allyl persulphide and two turpenes; a resin contain ferrulic acid ester of asaresino-tannol from ferulic acid, gum 25%, ash 4% also malic, acetic, formic and valeranic acids. Resin on dry distillation yields umbelliferon. When fused with potash it yields resorcin and pyrocatachuic acid.

3.2. Gunapadam aspect :

Part used :

Gum resin

Taste (*Suvai):*

Bitter

Character (*Thanmai):*

Veppam

Classification (*Pirivu):*

Kaarpu

Gunam :

மந்தம்வாதம் உதாவர்த்தம் அல்குல்நோய்

மார்பணங்கட்ட குன்மம்மகோதரம்

உந்துகெர்ப்பத்தின் வித்திரஞ்சூலை

மாயுநாறூநற் காயங்கிடைக்கினே.

மந்தம், **ஏப்பம்**, **வாதம்**, **சூதகவாயு**, **குன்மம்**, **பெருவயிறூ**, **சூதகச்சூலை தீரும்**.

Medicinal uses :

- Ferula asafetida 1 part, common salt 2 parts , piper longum 4 parts these are dried then make into chooranam for gunmam, soolai, dhanurvayu.
- Asafoetida mix with yellow egg yolk and give it for dry cough.
- Asafoetida mix with vigna mungo powder and make it as fumes for asthma and flatulence.

3.2 .SODIUM CHLORIDE IMPURA :

Tamil	-	Indu- uppu, Saindhavam, mathi- uppu
English	-	Rock salt
Sanskrit	-	Saindhava
Hindi	-	Sendhalon, sedhalon
Malayalam	-	Intu- uppu
Telugu	-	Saindhalavanam
Arab	-	Mil-he-tabazard
Pers	-	Namakesang

Source :

Found in nature in extensive beds mostly associated with clay and calcium sulphate. To obtain it, holes are dug into these rocks which soo become filled up with salt water; the water is evaporated and the salt is left ready to use.

Character :

It is found in small white crystalline grains or transparent cubes. It is brownish white externally and white internally. It has pure saline taste and burns with a yellow flame.

Action :

In small doses it is highly carminative, stomachic and digestive. In large dose (4.2 gm or 8.4 gm)it is laxative and (16.8gm or 21gm) it is purgative . Rock salt posseses of stronger purgative properties than cream of tartar.

Gunam :

அட்டகுன்ம மந்தம் அசிர்க்கரஞ்சூர் சீதபித்தந்

துட்டவையம் நாடிப்புண் டோடங்கள் – கெட்டமலக்

கட்டுவிட விந்தையக் காமியநோய் வங்கரப்பான்

விட்டுவிட விந்துப்பை விள்.

இந்துப்பினால் எண்வித குன்மம், **அலசம்**, **அசிர்க்கரம்**, **நரம்புக்கிரந்தி**, **மலபந்தம்**, **விஷம்**, **திரிதோஷம்**, **கடுவன்**, **இரத்த மூலம்**, **நேத்திர காசம்**, **சுவாசம் தீரும்**.

Medicinal uses :

Induppu chooranam :

It contains rock salt, Cuminum cyminum, Pipper longum, Carum copticum, Zingiber officinale, Terminalia chebula in equal parts mixed and made into powder is used in anorexia, flatulence and biliousness.

Thengaisharam :

It is highly recommended in chakradhatta as valuble in the form of dyspepsia which is attended with pain two or three hours after meals. It is thus prepared: Take a cocoanut fruit full of water make a hole in it and fill the cocoanut with rock- salt and dissolve it in its water. Then close the opening, cover the nut with a layer of clay and roast it in a pit of fire.

3.3. MODERN ASPECT OF DISEASE :

PEPTIC ULCER DISEASE :

Ulcers are defined histologically as a breach in the mucosa of the alimentary tract that extends through the muscularis mucosa into the submucosa or deeper.It occurs in the lower oesophagus, stomach or duodenum, in the jejunum rarely, in the ileum adjacent to a Meckel's diverticulum.Ulcers in the stomach or duodenum may be acute or chronic; both penetrate the muscularis mucosae but the acute ulcer shows no evidence of fibrosis.

Peptic ulcers :

Peptic ulcers are usually solitary lesions less than 4 cm in diameter, located in the following sites, in order of decreasing frequency,

- Duodenum, first portion
- Stomach, usually antrum
- At the gastroesophageal junction, in the setting of gastroesophageal reflux or Barrett esophagus
- Within the margins of a gastrojejunostomy

- In the duodenum, stomach and jejunum of patients with Zollinger- Ellison syndrome
- Within or adjacent to an ileal Meckeldiverticulam that contains ectopic gastric mucosa.

Aetiology :

Helicobacter pylori :

Around 90% of duodenal ulcer patients and 70% of gastric ulcer patients are infected with H. pylori; the remaining 30% of gastric ulcers are due to NSAIDs.

Pathogenesis and pathophysiology :

H.pylori is Gram- negative,live deep beneath the mucus layer closely adherent to the epithelial surface. It uses an adhesin molecule (bABa) to bind to the Lewis b antigen on epithelial cells.

Here the surface Ph is close to neutral and any acidity is buffered by the organism's production of the enzyme urease. This produces ammonia from urea and raises the pH around the bacterium and between its two cell membrane layers. The bacteria spread by person to person contact via gastric refluxate or vomit.

H. pylori induces an intense inflammatory and immune response. There is increased production of pro- inflammatory cytokines such as interleukin (IL)- 1, IL-6, tumor necrosis facter (TNF), and, most notably, IL-8. This cytokine is produced by the mucosal epithelial cells, and it recruits and activates neutrophils.

The bacterium stimulates chronic gastritis by provoking a local inflammatory response in the underlying epithelium. This depends on numerous factors, notably expression of bacterial cagA and vacA genes.

Which the cagA product is injected into epithelial cells, ultimately interacting with numerous cell- signalling path-ways involved cell replication, apoptosis and morphology. H.pylori strains expressing cagA are more often associated with disease than cagA strains. Most strains also secrete a large pore- forming protein called vacA which causes large vacuoles to form in cells in vitro. In vivo, vacA has many effects including increased cell permeability, efflux of micronutrients from the epithelium, induction of apoptosis and suppression of local immune cell activity.

In most people H. pylori causes antral gastritis associated with depletion of somatostatin(from D cells) and gastrin release from G cells. The subsequent hypergastrinaemia stimulates acid production by parietal cells, but in the majorityof cases this has no clinical consequencs.

In a minority of patients (perhaps smokes) this effect is exaggerated, leading To duodenal ulcration. The role of H. pylori probably acts by reducing gastric mucosal resistance to attack from acid and pepsin. In approximately 1% of infected people, H. pylori causes a gastritis leading to gastric atrophy and hypochlorhydria. This allows bacteria to proliferate within the stomach; these may produce mutagenic nitrites from dietary nitrates, predisposing to the development of gastric cancer.

NSAID:

The major drawback of NASIDs is gastrointestinal toxicity. Prostaglandins of the E series play a major role in gastroduodenal defence mechanisms. By depleting mucosal prostglandin levels, aspirin and NSAIDs impair this 'cytoprotection', resulting in mucosal injury, erosions and ulceration. NSAIDs are an important aetiological factor in up to 30% of gastric ulcers. These drugs also reduce the integrity of the duodenal mucosa but are probably responsible for only a small proportion of duodenal ulcers. They greatly increase the risk of bleeding of perforation from pre-existing gastric and duodenal ulcers.

Risk factors for nsaid-induced ulcers:

1. Age > 60 years
2. Past history of peptic ulcer
3. Past history of adverse effect with NSAIDs
4. Concomitant corticosteroid use
5. High-dose or multiple NSAIDs
6. Individual NSAID—highest with azapropazone, piroxicam,
7. ketoprofen; lower with ibuprofen

Smoking:

Smoking confers an increased risk of gastric ulcer and, to a lesser extent, duodenal ulcer.

Acid-pepsin versus mucosal resistance:

An ulcer forms when there is an imbalance between aggressive factors, i.e. the digestive power of acid and pepsin, and defensive factors, i.e. the ability of the gastric and duodenal mucosa to resist this digestive power . This mucosal resistance constitutes the gastric mucosal barrier. Ulcers occur only in the presence of acid and pepsin; they are never found in achlorhydric patients such as those with pernicious anaemia. On the other hand, severe intractable peptic ulceration nearly always occurs in patients with the Zollinger-Ellison syndrome which is characterized by very high acid secretion.

Genetic predisposition:

Multiple Endocrine Neoplasia (syndrome I) is associated with Peptic ulcer disease.

Emotional strees:

This is in someway related to increased acid production and hence peptic ulceration.

delayed gastric emptying:

This may increase gastrin release and more acid secretion.

Clinical features:

PAIN :

Pain has got several important features:

Location:

Usually in the epigastric region

Character:

Usually burning, sometimes aching or stitching or gnawing in character.

Relation with Food:

Food minimizes of abolishes pain in 50% cases. Pain comes 2-3 hours after taking food.

Radiation:

Sometimes pain is radiated to the chest. Post bulbar ulcer pain may be radiated backwards.

Relieving Factors:

After taking soda, alkali or antacid,

Pain is relieved. Food also causes relief of pain in about 50% of subjects or by induced vomiting pain is relieved.

Nocturnal or Hunger Pain:

Pain appears at midnight of late hours of the night often awakening the patient from the bed. It is very characteristic (and is present in about 60%-70% cases.)

Periodicity of Pain:

During winter months pain is prominent but it disappears during summer months.

Clock-like Reguarity of Pain:

Same type of food taken in same hours :

1. Heart burn, acidity, acid regurgitation and water-brash are common.
1. Vomiting may be present, it is often induced and may relieve pain.

Complications of peptic ulcer disease:

Bleeding

1. Occurs in 15% to 20% of patients
2. Most frequent complication
3. May be life-threatening
4. Accounts for 25% of ulcer deaths
5. May be the first indication of an ulcer

Perforation

1. Occurs in about 5% of patients
2. Accounts for two thirds of ulcer deat
3. Rarely, is the first indication of an ulcer

Obstruction from edema of scarring

1. Occurs in about 2% of patients
2. Most often due to pyloric channel ulcers
3. May also occur with duodenal ulcers
4. Causes incapacitating, crampy abdominal pain
5. Rarely, may lead to total obstruction with intractable vomiting

Investigations:

- Complete Blood Picture- Tc, Dc, ESR, and Hb.
- Routine Blood Examination- Blood sugar and urea
- Video Endoscopy
- To know the extent of the lesion
- To confirm the diagnosis
- To take biopsy
- EGD -esophagogastroduodenoscopy
- Ultrasound abdomen
- Barium Meal Study
- Duodenal ulcer - deformed duodenal cap is seen
- Gastric ulcer - appears as a Niche in the lesser curvature due to ulcer crater and as a Notch on the greater curvature due to the spasm of stomach.

 Test for h.pylori

 Non- invasive test

1.Serology

2. Urea breath test

3. Faecal antigen test

 Invasive test -

1.Histology (Antral biopsy)

2. Rapid urease test

3. Microbiological culture

3.4. SIDDHA ASPECT OF DISEASE :

GUNMAM :

Main features of peptic ulcer :

- Burning sensation and pain in the abdomen.
- Digestion is not proper.The food is not get digested.
- Vomiting is the worst symptom there by all the food product intake are vomited out, as a result, nutritional status and stamina of the body day by day decreases. So patient become depress day by day and also have the suicidal tendency.
- Some authors called this disease has 'kulmam' because one type of this disease, have the feature of forming flatulence, it more like ball from one side to another in the abdomen and produce discomfort.

Causes of peptic ulcer :

- Eating hot and belching substance.
- Eating food mixed with sand, bran, stone and dust.
- Drinking contaminated water like spring water, stagnant water and mixed water.
- Eating food which cann't be digested early like coconut milk
- By getting angry, starvation and depression frequently
- Practising yoga in a wrong manner especially in breath control.

Prodromal symtoms:

Anorexia, nausea, frequent flatulence, excessive salitary secretion, regurgitation,abdominal pain, vomiting, flatulence with sourness, increased bowel sounds.

Types of the disease:

Saint yugi classified this disease onto 8 types and they are described as follows,

- *Vayu gunmam*
- *Vatha gunmam*
- *Pitha gunmam*
- *Ery gunmam*
- *Vali gunmam*
- *Sathi gumam*
- *Sanni gunmam*
- *Sethuma gunmam*

Saint THIRUKANDA MINIVAR classified this disease into 8 types and they are described as follows,

- *Vatha gunmam*
- *Pitha gunmam*
- *Kapha gunmam*
- *Vatha pitha gunmam*
- *Vatha kapha gunmam*
- *Pitha silethuma gunmam*
- *Tridodha gunmam*
- *Raththa gunmam*

Again this *Raththa gunmam* is sub divided into *raththa vatha gunmam* and *raththa vatha pitha gunmam*.

Some ancient physician have classified a disease into 3 types as follows

- *Saamaniya vatha gunmam*
- *Saamaniya pitha gunmam*
- *Saamania silethuma gunmam.*

Vatha gunmam

The disease mostly appears during the age of 20 to 30 years which is the 'Vatha period'. Patient may develop severe abdominal pain and also develop tiredness, giddiness, thirst and dryness of tongue.Vomiting may also follow which will reduce the pain slightly. In this disease the food indigested will not be digested properly and produces stomach pain . Even though the patient will not take food properly, the body will appear as obese. However, patient will loose his strength and will become lean.

There may be small quantity of blood in the vomit which appears dark in colour.In later the disease will produce indigestion throughout the life of the patient.Unbearable pain in the abdomen and over the chest below the xiphisternal region.

Pitha gunmam :

Pain in the upper abdomen and urine will appear red in colour. The patient will be having burning pain in the stomach and also develop nausea and vomiting. The vomitus may be found mixed with mucus and pitha. Excessive thirst, vertigo are other features of the disease.Patient may become unconscious after vomiting. As the vomiting increases, burning pain in the chest and abdomen. The npitha dodha causes uncontrollable pain and produced uncontrollable vomiting.It is considered that the disease occurs in the age of 30 -50 years. Besides, there will be loss of body strength and impaired quality of blood as the foods taken are vomited out this causes yellow colouration of skin.As the disease, progresses, the pain in the abdomen will be severe after eating.The abdomen will appear heavy; the appetite will be impaired and patient will dislike to eat.Ageusia, dryness of tongue, regurgitation of fluid in the stomach

Iya gunmam :

If the disease occurs in the old age period which is the period of 'Kapha period'. The essential features of the disease are dislike of food, lean body mass due to malnutrition leading to anaemia, vertigo, tremors and frequent fright. The ingested food will not get digested and stays in the stomach; the food will get fermented and come out only in vomitus with asmell of meat. In later,continuous pain in the abdomen and excessive haemetemesis. The body may become lean day by day; these features will make one to suspect that patient might be having cancer in stomach.Patient may also develop vomiting of white coloured substance frequently.

Sanni gunmam :

In this type of disease , there will be excessive salivary secretion; the abdomen will be distended and mition will be passed hot with excessive sound; the mouth will have salty taste; there will be also irritation of the throat . the patient may not have the desire for food. The patient will frequently develop belch, dysponea and giddiness, the body also will become cool.

Vayu gunmam :

The excessive activity of vatha dosha in this disease causes damage to the stomach. The disease may be also called as paayuru gunmam and soolai gunmam. Patient may also develop unbearable pain in the stomach due to gas like pulling sensation. The downward directing factor (abana vayu) gets stimulated and it prevents the digestion of ingested food; this results in abdominal pain, irritation of chest, pain as if the intestine is twisted. The patient may also develop dislike to food. Even though the food ingested will be small quantity, abdomen will appear distended like gas filled belly; there will be loss of strength.

Eri gunmam :

The patient will develop pain as if the stomach is twisted. Excessive salivary secretion, pain in the head, sour belch from the stomach, distention of abdomen with excessive bowel sound, diarrhoea and sweating over the root of hair are other features of the disease. In this type of disease, unbearable irritation in the stomach develops within a short time after taking the food. Ultimately, the patient will become lean.

Vaanthi gunmam :

In this disease, the patient will develop indigestion, vomiting, burning pain in stomach, constipation, giddiness, spasm and irritation of stomach, a sensation of heat of fire in the body, inability to walk and ageusia. There will be protuberance of nerves and patient may develop numbness. Ultimately, the patient will develop loss of strength.

Vali gunmam :

As the kaphadosha and vatha doshas are associated in this disease, the ingested food will not be digested and also will not be vomited out. The food stays in the stomach and causes pricking pain in throat and twisting pain in stomach. In this disease, the food ingested will not be digested and the abdomen will be distended with gas. Pain at the rib sites as if it is pricked by thorn, pain in the hip and in the vertebral region, throbbing pain of the whole body, dislike to food, diarrhoea with excessive bowel sounds are the other features of the disease. Sometimes , the patient may not be in a position to bear the pain and even develop suicidal tendency.

General features of the disease :

The disease occur in women and also in the older age. The disease usually occurs in men in the age group of 25 -45 years. The disease progresses gradually and other features such as indigestion, appearance as if the abdomen is distended, rolling pain in the abdomen may also appear. When patients have good body strength and capacity to digest any type of food, may suddenly develop anorexia, nausea, bilious vomiting, belch and sour belch from the stomach. As the disease increases in severity, patient may develop unbearable pain and may put the finger into the throat to inducing vomiting; after vomiting the pain may be reduced slightly.

Doshas and other facters :

1. Ancient saint theran said ‘ Thodar vatha bandhamallathu gunmam varadhu ‘.
2. Due to the wrong food habit nad bad activities the Vatha dosha worsens.
3. The other dosha will also associated with it and fail to perform their natural junctions. Due to this the downward directional factors and the upward directional factor (udhana vayu) malfunctioning; the food ingested will not be digested and purity of blood is also lost.
4. In addition to the above, the downward directional factor controls the passage of stool and causes increase of gas in the stomach the upward directional factor causes vomiting and aggravate the disease.

Pulse :

1. If the vatha and pitha pulses appear to be associated and their strength also appear to be integrated as single strength, it can be considered that this tends to erigunmam due to mantham.
2. If the Vatha pulse runs in the left side or by the side may denote Vatha gunmam.
3. The other types of pulses do not move in their proper direction and move to the left or by the side, they may give due to appropriate gunmam disease.
4. In the vatha pulse is felt abnormally like a vibration is tightly held rope which was raised with a finger and has suddenly dropped, it may be suggestive of vali gunmam disease.

OTHER PREPARATIONS OF *FERULA ASAFOETIDA :*

Sarabendirar gunma roga sigichai :

1. *Sinjashara vadagum* - *pg no 6*
2. *Kumattikai ennai* - *pg no 96*

Sarabendirar vaidhya rathnavali :

1. *Thengai paagu* - *pg no 86*
2. *Gunma kudori* - *pg no 379*

Siddha vaithya thirattu :

1. *Thaleesadhi chooranam* - pg no 225
2. *Kumatti kuzhambu* - *pg no 179*
3. *Gunma kudori mezhugu* - *pg no 200*
4. *Kowshikar kuzhambu* - *pg no 201*

OTHER PREPARATIONS OF SODIUM CHLORIDE IMPURA :

Sarabendirar gunma roga sigichai :

1. *Nava sinjashara vadagam* - *pg no 5*
2. *Lavana chenduram* - *pg no 59*
3. *Sarabendhira kuligai* - *pg no 134*

Sarabendirar vaidhya rathnavali :

1. *Gunmathukku kalkam* - *pg no 376*

Siddha vaithya thirattu :

1. *Vengara mathirai* - *pg no 45*
2. *Pancha lavana parpam* - *pg no 116*
3. *Nayuruvi uppathi kuzhambu* - *pg no 193*
4. *Sanga thiravagam* - *pg no 298*

OTHER PREPARATIONS OF *CUMINUM CYMINUM :*

Sarabendirar gunma roga sigichai :

1. *Sangashaaram* - *pg no 10*
2. *Kozhi parpam* - *pg no 124*

Siddha vaithya thirattu :

1. *Inji legium* - *pg no 247*
2. *Panchadeepsgni chooranam* - *pg no 220*
3. *Navarasa thuvaial* - *pg no 192*
4. *Seeraaga chooranam* - pg no 211

OTHER PREPARATIONS OF *ACORUS CALAMUS :*

Sarabendirar gunma roga sigichai :

1. *Kukilathy mathirai* - *pg no 13*
2. *Punarnavaadhi krutham* - *pg no 32*

Siddha vaithya thirattu :

1. *Meganatha kuligai* - *pg no 39*
2. *Pirandai vadagam* - *pg no 228*

OTHER PREPARATIONS OF *ZINGIBER OFFICINALE :*

Sarabendirar gunma roga sigichai :

1. *Koda soozhi mathirai* - *pg no 36*
2. *Sanga kudori kuligai* - *pg no 140*
3. *Gunmathy kudaaram* - *pg no 73*

Sarabendirar vaidhya rathnavali :

1. *Gunmathukku kasayam* - *pg no 94*

Siddha vaithya thirattu :

1. *Sanjeevi mathirai* - *pg no 19*
2. *Sianar amirtham* - *pg no 161*
3. *Amukkara chooranam* - *pg no 213*
4. *Thairchundi chooranam* - *pg no219*

4.MATERIALS AND METHODS

4.1 preparation of *Hingu chooranam :*

Selection of drug:

The trial drug ***Hingu chooranam*** was selected from the Siddha literature "*Sarabendhirar vaitya muraigal- gunmaroga sigichai*".

Collection of drug:

Raw drugs were bought from the TAMCOL sales counter, Arumbakkam, chennai-106. The raw material was identified and authenticated by PG Gunapadam dept. Govt Siddha medical college, Chennai 106.

Purification of the ingredients:

Purification of *Zingiber officinale* :

Peel off the skin and put in calcium carbonate for 3 hours then dried it in sunlight and washed.

Purification of *cuminum cyminum :*

Dried 6 hours in sunlight and fried slightly .

Purification of *Ferula asafoetida :*

Fried till water content evaporated.

Purification of *Acorus calamus :*

Slow it in fire and made it into carbon form (Before ash form).

Purification of Sodium chloride impure :

Soak it *in kaadi* (Vinigar) and then dried it in sunlight.

Purification of Plumbago zeylanica :

Remove the inner nerve and outer bark only should powdered and place it in a cloth which is tied in the mouth of a pot filled with milk, then closing with another pot above and put it in a flame for 3 hours. Then take the powder dried and grind it well.

Figure no :4.1.1

Purified Sodium chloride impure

Figure no :4.1.2

Purified *Ferula asafoetida*

Figure no :4.1.3

Purified *Zingiber officinale*

Figure no : 4.1.4

Purified *Cuminum cyminum*

Figure no :4.1.5

Plumbago zyelanica

Figure no :4.1.6

Purified *Plumbago zyelanica*

Figure no : 4.1.7

Purified *Costus speciosus*

Figure no : 4.1.8

Purified *Terminalia chebula*

Figure no : 4.1.9

Acorus calamus

Figure no :4.1.10

Purified *Acorus calamus*

Preparation of chooranam :

Ferula asafoetida	- *1* Part
Sodium chloride impure	- *2* Part
Cuminum cyminum	- 3 Part
Acorus calamus	- *4 Part*
Zingiber officinale	- 5 Part
Terminalia chebula	- *6* Part
Plumbago zeylanica	- 7 Part
Costus speciosus	- 8 Part

Thease ingridients were purified by sasthrik method from siddha literature of " *Sarakkugalin suddhi muraigal* ".Thease drugs were made into fine powder. Then mixed well into form of homogenous mixture. To get the finest physical form of this drug, the powdered material is sieved through a white cotton cloth *(Vashthirakayam)*.

Purification of *chooranam*:

The *Chooranam* was moistened with cow's milk. The pot was half filled with milk and water. The mouth of the pot was covered and tied with white cotton cloth. The *Chooranam* (moistened by milk) was placed above the tied cloth. The mouth of the pot closed with another mud pot. The gap between the two mud pots was tied with a wet cloth to avoid evaporation. Then this arrangement was put on fire and boiled until water level gets reduced in the lower pot. Then the powder was taken, dried, powdered finely and preserved for usage.

Preservation:

The purified *Chooranam* was stored in a clean, air tight glass container. Since the life period of the *Chooranam* is only three months, the prepared *Chooranam* must be used within this period.

Figure no : 4.1.**11 Hingu chooranam**

Administration of the drug:

Form of the medicine	:	*Chooranam*
Route of Administration	:	Enteral
Dose	:	3 pinches
Anubanam (Vehicle)	:	Warm water
Times of Administration	:	Two times a day; before food
Duration	:	7 weeks

4.2. Standardization of the drug

4.2.1. Physico-chemical analysis:

4.2.1.1. Ash and acid insoluble ash:

To the ash add 1:5 Hcl: Distilled water 15 ml boil, cooled and then filtered using whatman filter paper (No.41) repeat 3 to 4 times till the yellow colour disappear or colourless, then remove the filter paper and add to the filter to the original dish and keep it in the muffle furnace at 600^{o} C and take constant weight and calculate the acid insoluble ash value.

$$\text{Acid insoluble ash (\%)} = \frac{\text{Weight of acid insoluble residue x 100}}{\text{Weight of the sample}}$$

Acid insoluble residue = Acid insoluble ash value – Empty weight of the dish

Loss on drying:

3gm of the drug is heated in a hot oven at 105^{0} c to constant weight. The % of weight was calculated.

Loss on drying value at 105^{0} c - 10.96 %w/w

Potential of hydrogen (*pH*):

The pH scale is logarithmic and runs from 0.0 to 14.0 with 7.0 being neutral. Readings less than 7.0 indicate acidic solutions, while higher readings indicate alkaline or base solutions.

4.2.1.2 TLC estimation of Hingu *chooranam*:

Thin-layer chromatography is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. The adsorbent is a relatively thin, uniform layer of dry finely powdered material applied to a glass, plastic or metal sheet or plate. Glass plates are most commonly used.

Identification can be effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation.

Solvent system:

Toluene : Ethyl acetate (6:1.5).

TLC plate:

Aluminium plate precoated with silica gel $60F_{254}$ of 0.2 mm thickness (Merck).

Developing chamber:

Camag's twin trough chamber.

Visualizing reagent:

Vanillin-sulphuric acid reagent.

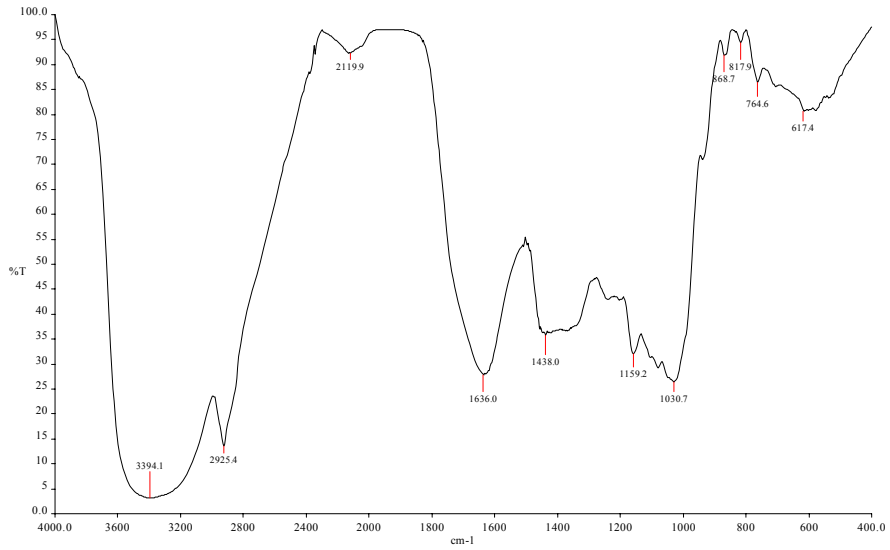
Extract Preparation:

4 g of the chooranam was soaked overnight in chloroform. Boiled on a water bath for 10 mins, filtered and concentrated to 10 ml.

Procedure:

The extract was applied on the TLC using capillary and developed in the solvent system. The developed TLC plate was air dried and photograph was taken in white light. Then dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph taken.

4.2.1.3. Fourier transform infrared spectroscopy (FTIR):



4.2.1.4. Scanning electron microscope (sem):

The Scanning Electron Microscope (SEM) is a microscope that was electrons rather than light to form an image. There are many advantages to using the SEM instead of a light microscope.

Resolution : 1.2 nm gold particle separation on a carbon substrate

Magnification : From a min of 12 x to greater than 1, 00,000 X

The SEM has a large depth of field, which allows a large amount of the sample to be in focus at one time. The SEM also produces images of high resolution, which means that closely spaced features can be examined at a high magnification. Preparation of the samples is relatively easy since most SEM one require the sample to be conductive.

The combination of higher magnification, larger depth of focus, greater resolution, and easy of sample observation marks the SEM one of the most heavily used instruments in research areas today.

4.2.2 Qualitative phytochemical analysis:

Test for Phenol

Substance in water is added with 5 % alcoholic ferric chloride. Dark blue or green colour shows presence of phenol.

Test for Tannin

Substance is shaken with water and added with lead acetate solution. White precipitate shows the presence of tannin.

Test for Flavonoids (Shinoda test)

Substance is dissolved in alcohol, added with magnesium bits and concentrated hydrochloric acid. On heating over a water bath, the appearance of majenta colour shows the presence of flavonoids.

Triterpenoids (Noller's Test)

To fewmg of extract, add tin and thionyl chloride and heat in water bath. Purple colour indicates the presence of tritepenoids.

Test for steroids :

An ethonolic extract of plant sample 2ml is mixed with 2 ml H SO and o.5 gm Acetic anhydride. The solution turns in to blue to green colour shows the presence of steroids.

Test for Anthraquinones

Few milligram of crude powder is shaken with 10 ml of benzene and filtered. To this filtrate, 0.5 ml of 10 % ammonia solution is added and the mixture is shaken well and the presence of the violet colour in the layer phase indicates the presence of the anthraquinone.

Test for Alkaloids (Dragendorff's Test)

Few mg of extract in separate test tube was warmed with 2% Sulphuric acid for 2 minutes. And it was filtered in separate test tube and few drops of Dragendorff's reagent were added. The presence of orange red precipitates indicates the presence of alkaloids.

Test for Saponins

To few mg of extract distilled water is added and shaken well. The formation of foam indicates the

presence of saponin.

Test for Cardiac glycoside (Keller-Killani Test)

Add 2 ml of glacial acetic acid containing a drop of ferric chloride solution and and 0.5 ml of concentrated sulphuric acid to the chloroform extract of the plant. The blue color in the acetic acetic acid layer shows presence of cardiac glycosides.

4.2.3 chemical analysis:

Proximate Chemical Analysis of a Drug

Methodology For Chemcial Analysis

Preparation of Extract :

Add 5 gm of the sample to 50ml of distilled water. Boil the solution for 20 minutes, cool and then filter. Use the Extract for the following tests.

S.No	Experiment	Observation	Inference
1.	**Test for reducing Sugar :** To 5ml of Benedicts qualitative reagent, add 10 drops of extract, then boil for two minutes	Green / Yellow / Red PPT	Presence of Reducing Sugar
2.	**Test for Starch :** To 5 ml of extract add 2ml of acetic acid and then add few drops of N/50 Iodine Solution.	Blue Colour	Presence of Starch
3.	**Test for Proteins :** To 2 ml of extract, add 2ml of 5% Sodium Hydroxide mix and add 2 drops of Copper Sulphate Solution.	Violet or Purple Colour	Presence of Proteins
4.	**Test for amino Acid :** Place 2 drops of extract on a filter paper and allow to dry well. Then spray 1% ninhydrin over the same and allow to dry.	Violet Colour	Presence of Amino Acid
5.	**Test for Albumin :** To 2 ml of extract, add 2ml of Esboch's reagent.	Yellow PPT	Presence of Albumin

S.No	Experiment	Observation	Inference
6.	**Test for Phosphate :** To 2ml of extract, add 2ml of ammonium Molybdate solution and 2ml of concentrated Nitric Acid.	Yellow PPT	Presence of Phosphate
7.	**Test for Sulphate :** To 2 ml of extract add 2ml of 4% ammonium oxalate solution.	White PPT	Presence of Sulphate
8.	**Test for Chloride :** Add 2ml of extract to dilute nitric acid till the effervescence ceases. Then add 2 ml of Silver Nitrate Solution.	Cloudy White PPT	Presence of Chloride
9.	**Test for Iron :** To 2ml of extract, add 2ml of ammonium thio cynate solution and add 2ml of concentrated Nitric Acid.	Red Colour	Presence of Iron
10.	**Test for Calcium :** To 2 ml of extract, add 2 ml of 4% ammonium Oxalate Solution.	White PPT	Presence of Calcium
11.	**Test for Sodium :** Make a paste with 2 pinches of the sample with Hcl and Introduce it into the blue flame.	Yellow Flame	Presence of Sodium
12.	**Test for Potassium :** Add a pinch of the sample to 2 ml of Sodium Nitrate Solution. Then add 2ml of Cobal Nitrate in 20% acetic acid.	Yellow PPT	Presence of Potassium

S.No	Experiment	Observation	Inference
13.	**Test for Zinc :** To 2ml of extract, add few drops of Sodium Hydroxide.	White PPT	Presence of Zinc
14.	**Test for Magnesium :** To 2ml of extract, add few drops of Sodium Hydroxide Solution	White PPT	Presence of Magnesium
15.	**Test for Alkaloids :** a. To 2ml of extract, add 2ml of Potassium Iodide Solution b. To 2ml of extract add 2ml of Picric Acid. c. To 2 ml of extract add 2ml of Phosphotunqstic Acid.	Red Colour Yellow Colour White PPT	Presence of Alkaloids Presence of Alkaloids Presence of Alkaloids
16.	**Test for Tannic Acid :** To 2ml of extract add 2 ml of Ferric Chloride Solution	Black PPT	Presence of Tannic Acid

4.3. TOXICOLOGICAL STUDY :

EVALUATION OF ACUTE AND SUB ACUTE TOXICITY STUDY ON *HINGU CHOORANAM*

Animals:

Mice of either sex weighing 25-30g and rats weighing 210-240g were obtained from the animal house of Vels University. The animals were used with the approval of the Institute animal ethics committee and obtained from Vels University, Chennai. They were fed with a balanced standard pellet diet and maintained under standard laboratory conditions, providing 24-28^{0}C temperature, standard light cycle (12 h light, 12 h dark) and water ad libitum.

Animals were kept in cages with raised floors of wide mesh to prevent coprophagy. Animal welfare guidelines were observed during the maintenance period and experimentation. The rats were randomly assigned to control and different treatment groups, six animals per group. The animals were acclimatized for one week under laboratory conditions.

Acute toxicity study-oecd 425 guidelines:

Acute oral toxicity test for the Hingu Chooranam was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice.

The animals were observed continuously for the first 4 h and then each hour for the next 24 h and at 6 hourly intervals for the following 48 h after administering of the test drug, to observe any death or changes in general behaviour and other physiological activities. Single animals are dosed in sequence usually at 48 h intervals. However, the time interval between dosing is determined by the onset, duration, and severity of toxic signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal. General behavior, respiratory pattern, cardiovascular signs, motor activities, reflexes, change in skin and fur, mortality and the body weight changes were monitored daily. The time of onset, intensity, and duration of these signs, if any, was recorded.

Sub-acute toxicity :

In a 28-days sub acute toxicity study, twenty four either sex rats were divided into four groups of 6 rats each. Group I that served as normal control was administered with distilled water (p.o.) while groups II, III and IV were administered daily with the Hingu Chooranam (p.o.) for 28 days at a dose of 100, 200 and 400mg/kg respectively. The animals were then observed daily for gross behavioural changes and any other signs of subacute toxicity.

The weight of each rat was recorded on day 0 and weekly throughout the course of the study, food and water consumption per rat was calculated. At the end of the 28 days they were fasted overnight, each animal was anaesthetized with diethylether, following which they were then dissected and blood samples were obtained by cardiac puncture into heparinised tubes. The blood sample collected from each rat was centrifuged with 3000 X g at 4^{o}C for 10 min to separate the serum and used for the biochemical assays.

***Hematological and blood biochemical analysis* :**

At the end of the study, all animals were kept fasted for 16-18 h and then anesthetized with anesthetic ether on the 28th day. Blood samples for hematological and blood chemical analyses were taken from retro orbital vein. Heparinized blood samples were taken for determining complete blood count (white blood cell count, differential white blood cell count, platelet count, red blood cell count, hematocrit, and hemoglobin) by semiautomated hematology analyzer.

The serum from non-heparinized blood was carefully collected for blood chemistry and enzyme analysis glucose, creatinine, total protein, albumin, total and direct bilirubins, serum glutamate-oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), and alkaline phosphatase (ALP)) were automatically determined using autoanalyzer.

***Necropsy* :**

All rats were sacrificed after the blood collection. The positions, shapes, sizes and colors of internal organs were evaluated. The Spleen, Testes, Pancrea, Lung, Liver, Brain, Heart, Stomach, Intestine, Bone, Ovary, and Kidney tissues were excised from all rats to visually detect gross lesions, and weighed to determine relative organs' weights and preserved in 10% neutral formalin for histopathological assessment. The tissues were embedded in paraffin, and then sectioned, stained with haematoxylin and eosin and were examined microscopically.

Statistical analysis :

Values were represented as mean ± SEM. Data were analysed using one-way analysis of variance (ANOVA) and group means were compared using the Tukey-Kramer Multiple Comparison test using GraphPad Instat-V3 software. $P < 0.05$ were considered significant.

4.4. PHARMACOLOGICAL STUDY:

EVALUATION OF ANTIULCER PROPERTY OF HINGU CHOORANAM

Introduction:

The prevalence of gastrointestinal ulcers differs around the world: duodenal ulcers are dominant the Western populations and gastric ulcers are more frequent in Asia, especially in Japan. As the prevalence of this disease increases over time, one would expect peptic ulcers to continue to have a significant global impact in the basic health and economic systems and in patients' life quality. Peptic ulcers are a deep gastrointestinal

erosion disorder that involves the entire mucosal thickness, penetrating the muscular mucosa.

For decades it was believed that gastrointestinal ulcerations were caused by the excessive secretion of gastric acid, but many patients presenting such ulcerations had normal acid secretion rates. Then, researchers reported that peptic ulcers were been caused by an imbalance between the aggressive factors and a number of known defense mechanisms. Exogenous aggressive factors such as smoke, anti-inflammatory drugs, alcohol, stress, fatty foods and *Helicobacter pylori* infections triggered tissue necrosis through mucosal ischemia, free radical generation and cessation of nutrient delivery, hydrochloric acid together with pepsin, pancreatic enzymes and bile decreased the defense mechanisms of gastrointestinal mucosa such as the intercellular junctions, local blood flow, mucus/bicarbonate secretion and cellular growth.

In recent years, a large advance in chemical and pharmacological studies has contributed to the knowledge about new therapeutically active compounds obtained from the natural products. These compounds can be used directly as leads for the development of new medicines or as pharmacological tools to discover new active compounds, so they can be life-saving or determine the quality of life in long-lasting diseases.

However, the incorrect use of the natural products offers dangers to society, so it is important to identify the active compounds, linking its structure with the biological activity and report the correct manner to use them with regards to dose, route of administration and frequency of use. Hence, the present study was undertaken to systematically determine the acute toxicity and antiulcer potential of the Hingu Chooranam using Aspirin induced experimental ulcer model.

Materials and methods :

***Chemicals* :**

All chemicals used in the present study were analytical grade and purchased from SD fine chemicals Ltd (Mumbai, India). Aspirin was obtained from BD Pharmaceutical Works and Ranitidine (Reference drug) was obtained from Ranbaxy Laboratories.

Stock solution preparation:

The powdered form of Hingu Chooranam was mixed uniformly in 2% CMC solution to achieve 100mg/ml as main stock solution and used in this study.

Animals

Albino mice of either sex weighing 25-30g (For acute toxicity study) and Healthy Swiss Albino rats of the Wister strain weighing 150-200 g were used for the study. The animals were used with the approval of the Institute animal ethics committee and obtained from Vels University, Chennai. They were fed with a balanced standard pellet diet and maintained under standard laboratory conditions, providing 24±28^{0}C temperature, standard light cycle (12 h light, 12 h dark) and water ad libitum. Animals were kept in cages with raised floors of wide mesh to prevent coprophagy. Animal welfare guidelines were observed during the maintenance period and experimentation. The rats were randomly assigned to control and different treatment groups, six animals per group. (XIII/VELS/PCOL/45/2000/CPCSEA/IAEC/08.08.2012). The animals were acclimatized for one week under laboratory conditions.

Acute toxicity study

Acute oral toxicity test for the Hingu Chooranam was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice. Single animals are dosed in sequence usually at 48 h intervals.

However, the time interval between dosing is determined by the onset, duration, and severity of toxic signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal. The time interval was adjusted as appropriately in case of inconclusive response. The test is simpler to implement when a single time interval is used for making sequential dosing decisions. Special attention was given during the first 4 hours and daily thereafter, for a total of 14 days, except where they need to be removed from the study and humanely killed for animal welfare reasons or are found dead.

All observations are systematically recorded and Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behaviour pattern. Attention was directed to observations of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma. The principles and criteria summarized in the Humane Endpoints Guidance

Document taken into consideration. Animals found in a moribund condition and animals showing severe pain or enduring signs of severe distress was humanely killed. When animals are killed for humane reasons or found dead, the time of death was recorded.

Anti-ulcer evaluation:

Aspirin induced gastric ulcer:

Animals were divided into four groups (n = 6) Hingu Chooranam (100, 200mg/kg) inter peritoneal and control vehicle were administered 30 min. before the administration of aspirin (400mg/kg) per orally. The animals were scarified, after 6 hours following the administration of aspirin, stomachs were removed and 2% formalin was injected into the stomach. The stomach was open along with greater curvature and immersed in 2% formalin solution. The length of each lesion was measured under the dissecting microscope. The sum of the length (mm) of all lesions for each rat was used in lesion index.

The ulcer score was determined by using a 10 × magnifying hand lens. The scoring of severity of ulceration was as follows: 1 mm (pin point) = 1; 1-2 mm = 2; > 2 mm = 3; > 3 mm = 4. The mean ulcer score was determined by dividing the total ulcer indices in a group by the total number of animals in that group. Ulcer Score = Total ulcer index (UI) in a group/Total number of animals in that group.

Statistical analysis:

The statistical analysis was carried out using one-way ANOVA followed by Dunnett's multiple comparison test. All the results obtained in the study were compared with the vehicle control group. P values <0.05 were considered statistically significant.

4.5. CLINICAL ASSESSMENT:

Nowadays Life style changed the food habits. This condition made considerable impact in changing the human physiology into pathology. Which leads to GI disorders are emerged. Even though there is a lot of medications available for this disease, still there is a thrive for less adverse effect drugs. Herbal medicines are playing vital role on curing diseases without marked adverse effects even though on long term intake. From this plant kingdom I have selected this herb which proved its anti – ulcer activity pre clinically. *Hingu chooranam*, a herbal medicine was used for this clinical trial to prove its safety and efficacy against Peptic ulcer disease.

Objectives :

The study was conducted on peptic ulcer patients to assess the "anti-ulcer" activity of ***"HINGU CHOORANAM"*** clinically, both in-patients and out-patients of both sex and varying age groups.

Study centre :

The clinical study for **PEPTIC ULCER** is carried out in outpatient department and in patient ward of Govt.Siddha medical college hospital and Arignar Anna Indian Hospital, Arumbakkam, Chennai-106.

Design of the study:

Open clinical trial, phase II B

Selection:

50 patients from both sexes of various age groups were selected for clinical trial. Among 50 patients 40 patients were treated as out-patients, 10 patients were treated as in – patients. The selection was based on the including and excluding criteria. They were clinically diagnosed on the basis of siddha principles with modern laboratory findings.

Registration process

To register a patient, the following documents has been proceeded.

- Copy of required laboratory tests
- Signed patient consent form

then I verified eligibility and assigned a patient study number, drug dose and registered the patient on the study.

Criteria selection:

Including criteria:

- Epigastric pain
- Heart burn
- Regurgitation
- Nausea/vomiting
- Loss of appetite
- Abdominal discomfort

Excluding criteria:

- Complication of peptic ulcer such as
- Haemorrhage,
- Perforation,
- Gastric outlet obstruction

- Radiating abdominal pain as in pancreatitis, appendicitis
- Acute abdominal colic's
- Cancer of the stomach
- Gall stone and hiatus hernia
- Cirrhosis of liver and jaundice

Criteria for withdrawal:

Patients were removed from study when any of the criteria listed below applies.In the absence of treatment delays due to adverse events, treatment may continue for 2 cycles or until one of the following criteria applies:

- Disease progression,
- Deterioration of vital signs with cardiac, respiratory, hepatic, renal and CNS changes.
- Intercurrent illness that prevents further administration of treatment,
- Unacceptable adverse event(s),
- Patient decides to withdraw from the study, or
- General or specific changes in the patient's condition render the patient unacceptable for further treatment in the judgment of the investigator.

Investigation:

For all the cases full clinical data were recorded and they were diagnosed on the basis of *SIDDHA* principles i.e. *ENVAGAI THRVUGAL*, *EZHU UDAL THATHUKKAL* etc. All the patients under study were subjected to blood investigations for TC, DC, ESR, and Hb. Blood urea, serum cholesterol and Blood sugar were also investigated.

Urine test for albumin, sugar, deposits and motion test for ova, cysts were done.

The disease *Peptic Ulcer* was confirmed in the patients by means of Endoscope examination, Barium meal examination and clinically.

Routine examination and assessment :

The full details of history and physical examination of the patients were recorded as per the proforma. The clinical assessment was done initially at the end of 7 days, 14 days and 21 days during treatment and at the end of the 21 days follow up were done. The laboratory investigation and the physiological parameters will be recorded initially and the end of the treatment and at follows up as per the Proforma.

Administration of the drug:

Form of the medicine	:	*Chooranam*
Route of Administration	:	Enteral
Dose	:	3 Pinches
Anubanam (Vehicle)	:	Warm water
Times of Administration	:	Two times a day; before food
Duration	:	7 weeks

Diet and medical advice:

Do's

- Timely food
- Banana
- Almond milk
- Raw goat's milk
- Carrots and cabbage juice
- Butter milk
- Should chew every morsel thoroughly
- Meals must be small and frequent

Dont's

- Fatty and tough meats
- Fried foods, Sour foods
- Unripe citrus fruits like oranges and sweet lime
- Spicy foods, carbonated drinks
- Strongly flavored veggies like cauliflower, turnip, radish, onion, etc
- Strong tea and coffee
  Alcoholic Beverages
- Intake of steroids and NSAIDS.
- Above all avoid worrying!

Trial conduct:

This study will be conducted in compliance with the protocol approved by the Institutional Review Board, and according to Good Clinical Practice standards. No deviation from the protocol will be implemented without the prior review and approval of the IRB except where it may be necessary to eliminate an immediate hazard to a research subject. In such case, the deviation will be reported to the IRB as soon as possible.

Criteria for assessment of response to therapy:

1) Good Relief : 75% relief in the presenting signs and symptoms marked normality pathological investigation.
2) Satisfactory : 60 – 75% relief signs and symptoms, moderate normality of pathological investigation.
3) Moderate : 50% relief of signs and symptoms, mild changes in pathological investigations.
4) Poor : less than 50% relief in symptoms and no significant improvement in laboratory parameters.

Then clinical signs and symptoms like Epigastric pain, Heart burn, regurgitation and distension of abdomen were observed regularly under the supervision of HOD, Lecturers, and Asst.Lecturers.

Follow up :

Assessment was taken for every three days before treatment and after treatment. During this period clinical assessment and laboratory investigation was carried out.

Statistical analysis :

The data will be tabulated and analyzed by students 'T' test. The resuls are showed in Table:8 and 9.

Ethical review :

The protocol and amendments were submitted to the Govt siddha medical college, Institutional Ethical Committee (IEC) and got formal approval for conducting the study. The decision of the IEC concerning the conduct of the study was made in writing to the investigator.

All subjects for this study was provided a consent form describing this study and provided sufficient information for subjects to make an informed decision about their participation in this study. This consent form was submitted with the protocol for review and approval by the IEC. The formal consent of a subject, using the IEC-approved consent form, was obtained before that subject is submitted to any study procedure. This consent form was signed by the subject or legally acceptable surrogate, and the investigator-designated research professional obtaining the consent.

CLINICAL STUDY ON HINGU *CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
1.	7185	Saraeshwathy 23/ Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	23.7.12 To 1.9.12	BT	8900	56	40	4	8	20	12	80	23	148	NIL	NIL	NIL		Good
					AT	9700	58	38	4	10	20	12	80	24	152	NIL	NIL	NIL		
2.	9577	Aashivatham 63/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	1.8.12 To 10.9.12	BT	9700	57	36	7	10	24	12	83	38	183	NIL	NIL	FPC	-	Good
					AT	9700	57	39	4	14	24	12	94	26	180	NIL	NIL	NIL		
3.	1573	Sivagami 60/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	8.8.12 To 19.9.12	BT	8500	58	38	4	13	20	12	100	20	160	NIL	NIL	FPC	-	Good
					AT	8500	58	38	4	15	23	12	100	22	165	NIL	NIL	NIL		
4.	5742	Selvanathan 38/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	10.8.12 To 21.9.12	BT	9700	57	39	4	14	24	12	85	24	165	NIL	NIL	FPC	-	Good
					AT	9700	55	41	4	12	24	13	85	18	160	NIL	NIL	NIL		
5.	3224 …	Rathinam 42/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	11.8.12 To 24.9.12	BT	9200	56	39	5	27	43	12	94	24	162	NIL	NIL	NIL	-	Satisfactory
					AT	9200	57	39	4	26	44	13	94	26	168	NIL	NIL	NIL		

CLINICAL STUDY ON *HINGU CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Urmg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
6.	4521	Meenakshi 32/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	14.8.12 To 27.9.12	BT	8600	53	43	4	12	23	11	94	26	150	NIL	NIL	PCS	-	Good
					AT	8600	54	42	4	14	26	11.5	96	24	144	NIL	NIL	NIL		
7.	598	Mani 43/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	17.8.12 To 1.10.12	BT	9500	57	37	6	14	32	12.5	85	23	164	NIL	NIL	NIL	-	Good
					AT	9500	58	38	4	14	30	13.5	86	20	163	NIL	NIL	NIL		
8.	5872	Shanmugam 34/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	25.8.12 To 7.10.12	BT	9400	57	39	4	15	33	12	95	21	159	NIL	NIL	FPC	-	Moderate
					AT	9400	58	38	4	15	30	14	93	23	168	NIL	NIL	NIL		
9.	5649	Latha 46/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	27.8.12 To 8.10.12	BT	9300	56	39	5	6	13	11	99	21	161	NIL	NIL	NIL	-	Good
					AT	9300	58	37	5	6	13	11	98	26	157	NIL	NIL	NIL		
10.	5896	Valli 47/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	28.8.12 To 8.10.12	BT	10200	56	38	6	24	40	11.2	121	19	156	NIL	NIL	FPC	-	Good
					AT	10200	54	41	5	22	38	12	118	20	164	NIL	NIL	NIL		

CLINICAL STUDY ON *HINGU CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
11.	986	Govindhan 38/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	29.8.12 To 10.10.12	BT	8700	58	37	5	20	43	12.5	85	23	162	NIL	NIL	PCS	-	Good
					AT	8900	59	36	5	22	40	12.5	85	19	158	NIL	NIL	NIL		
12.	1026	Sundareswari 34/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	30.8.12 To 12.10.12	BT	9500	56	40	4	15	30	11.6	84	21	168	NIL	NIL	NIL	-	Good
					AT	9600	55	41	4	14	32	11	80	19	162	NIL	NIL	NIL		
13.	3274	Senthil kumar 36/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	3.9.12 To 15.10.12	BT	9900	59	36	5	12	20	13	85	23	171	NIL	NIL	FPC	-	Good
					AT	9900	56	39	5	12	20	12.5	84	26	164	NIL	NIL	NIL		
14.	5923	Aarumugam 54/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	5.9.12 To 16.10.12	BT	8600	57	38	5	20	42	12.5	75	26	162	NIL	NIL	NIL	-	Moderate
					AT	8600	55	40	5	22	45	12	75	23	166	NIL	NIL	NIL		
15.	1273	Selvi 36/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	6.9.12 To 17.10.12	BT	10000	61	32	7	13	26	12	98	26	158	NIL	NIL	FPC	-	Good
					AT	10000	63	32	5	13	24	12	115	28	165	NIL	NIL	NIL		

CLINICAL STUDY ON HINGU *CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
16.	853	Nagajothi 37/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	9.9.12 To 18.10.12	BT	9700	56	38	6	12	28	11.5	95	21	155	NIL	NIL	PCS	-	Satisfactory
					AT	9800	56	39	5	10	24	11	94	26	166	NIL	NIL	FPC		
17.	3258	Rajan 43/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	12.9.12 To 23.10.12	BT	9500	58	38	4	15	43	13	116	26	158	NIL	NIL	NIL	-	Good
					AT	9600	58	37	5	14	40	12.5	108	20	160	NIL	NIL	NIL		
18.	245	Aaisha 32/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	15.9.12 To 26.10.12	BT	9300	58	37	5	8	18	14	108	27	153	NIL	NIL	FPC	-	Good
					AT	9300	59	38	3	10	15	13	110	23	162	NIL	NIL	NIL		
19.	5644	Thangam 54/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	17.9.12 To 29.10.12	BT	8600	60	35	5	14	32	10.6	89	36	165	NIL	NIL	NIL	-	Good
					AT	8500	58	37	5	14	30	10	89	26	158	NIL	NIL	NIL		
20.	1836	Sundhar 36/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	21.9.12 To 1.11.12	BT	8900	53	40	7	22	43	12.5	89	23	159	NIL	NIL	PCS	-	Moderate
					AT	8700	55	39	6	14	30	13	86	22	160	NIL	NIL	FPC		

CLINICAL STUDY ON HINGU *CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
21.	1421	Ssvitha 32/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	24.9.12 To 5.11.12	BT	10300	61	34	5	13	30	11.4	105	23	162	NIL	NIL	PCS	-	Good
					AT	10300	60	36	4	12	24	11.5	106	19	164	NIL	NIL	FPC		
22.	5831	Ansaari 37/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	30.9.12 To 11.11.12	BT	10000	57	38	5	35	60	13.5	101	28	168	NIL	NIL	PCS	-	Good
					AT	10100	60	34	6	15	30	13	96	21	160	NIL	NIL	NIL		
23.	3229	Krishnan 42/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	6.10.12 To 17.11.12	BT	9900	59	34	7	13	30	12	87	21	162	NIL	NIL	FPC	-	Good
					AT	9800	58	36	6	12	24	12.5	88	23	158	NIL	NIL	NIL		
24.	6134	Revathy 51/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	10.10.12 To 22.11.12	BT	8600	56	37	7	10	20	11.5	89	26	158	NIL	NIL	PCS	-	Good
					AT	8500	57	39	4	8	28	11	91	20	161	NIL	NIL	FPC		
25.	6388	Shyamala 24/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	10.10.12 To 21.11.12	BT	10100	61	34	5	13	34	10	88	20	153	NIL	NIL	NIL	-	Moderate
					AT	10200	62	34	4	11	20	10.5	86	18	155	NIL	NIL	NIL		

CLINICAL STUDY ON HINGU *CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Urm g/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
26.	694	dhanraj 34/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	13.10.12 To 25.11.12	BT	10000	56	38	6	13	32	11.5	94	24	159	NIL	NIL	FPC	-	Good
					AT	9900	58	38	4	10	30	12	83	23	160	NIL	NIL	NIL		
27.	1387	Hemalatha 42/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	17.10.12 To 29.11.12	BT	9500	59	36	5	14	34	11.5	112	26	163	NIL	NIL	PCS	-	Good
					AT	9600	57	38	5	14	22	11.5	110	18	161	NIL	NIL	NIL		
28.	5843	Ganesan 46/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	24.10.12 To 5.12012	BT	10100	62	35	3	8	26	13	85	20	170	NIL	NIL	NIL		Good
					AT	10100	60	36	4	10	30	13	88	18	168	NIL	NIL	NIL	-	
29.	316	Maheswari 37/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	31.10.12 To 11.12.12	BT	10200	55	38	7	12	25	11.5	100	32	167	NIL	NIL	PCS	-	Satisfactory
					AT	10200	58	37	5	12	20	12	98	20	168	NIL	NIL	FPC		
30.	598	Umamaheswari 24/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	1.11.12 To 13.12.12	BT	8200	61	35	4	5	10	11.5	84	23	152	NIL	NIL	FPC	-	
					AT	8400	60	34	6	5	10	11.6	86	21	154	NIL	NIL	NIL		Good

I NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
31.	944	muhamad 38/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	3.11.12 To 13.12.12	BT	10100	60	35	5	10	30	13	106	32	157	NIL	NIL	NIL	-	Satisfactory
					AT	9900	59	38	3	10	30	13	104	26	155	NIL	NIL	NIL		
32.	945	Suresh 37/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	3.11.12 To 11.12.12	BT	9500	57	37	6	6	8	32	115	23	167	NIL	NIL	PCS	-	Good
					AT	9600	58	37	5	5	10	24	112	20	160	NIL	NIL	NIL		
33.	1376	Sumathy 24/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	5.11.12 To 14.12.12	BT	8400	58	39	3	7	22	11	100	27	157	NIL	NIL	PCS	-	Good
					AT	8400	56	39	5	7	20	11	97	23	159	NIL	NIL	FPC		
34.	1377	Girija 28/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	5.11.12 To 15.12.12	BT	10100	60	36	4	12	32	12	98	18	154	NIL	NIL	NIL	-	Good
					AT	9900	57	40	3	8	26	12.5	92	17	158	NIL	NIL	NIL		
35.	1389	Manikkam 51/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	5.11.12 To 13.12.12	BT	9400	54	39	7	25	50	12	116	22	159	NIL	NIL	PCS	-	Moderate
					AT	9400	55	41	4	15	25	12	126	20	158	NIL	NIL	FPC		

CLINICAL STUDY ON HINGU *CHOORANAM* IN OUT PATIENTS DEPT. IN THE MANAGEMENT OF PEPTIC ULCER

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
36.	1381	Baskar 35/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	5.11.12 To 16.12.12	BT	9800	59	34	7	8	22	12	100	23	156	NIL	NIL	NIL	-	Good
					AT	9700	60	36	4	8	20	12	98	23	149	NIL	NIL	NIL		
37.	1677	Kannan 40/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	6.11.12 To 17.12.12	BT	10000	59	36	5	14	36	12	100	26	168	NIL	NIL	PCS	-	Good
					AT	10000	61	35	4	8	32	12.5	108	20	164	NIL	NIL	FPC		
38.	1927	Rajavel 41/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	7.11.12 To 18.12.12	BT	8900	58	37	5	14	30	12	120	21	162	NIL	NIL	PCS	-	Moderate
					AT	8700	56	39	5	10	20	12	118	23	163	NIL	NIL	FPC		
39.	1929	Selvakumar 35/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	7.11.12 To 17.12.12	BT	9100	61	32	7	12	20	12.5	88	22	158	NIL	NIL	FPC	-	Good
					AT	9200	64	31	5	10	24	12.8	87	26	165	NIL	NIL	NIL		
40.	1935	Rathinasamy 40/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	7.11.12 To 19.12.12	BT	8100	57	36	7	10	15	12.5	98	22	159	NIL	NIL	NIL	-	Good
					AT	8200	60	34	6	10	26	13	93	18	158	NIL	NIL	NIL		

CLINICAL STUDY ON *HINGU CHOORANAM* IN, IN-PATIENTS DEPT.IN THE MANAGEMENT OF GUNMAM

SI NO	IP. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
1.	711/ 7334	Sikkanthar baanu 52/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	18.6.12 To 27.6.12	BT	9200	58	37	5	15	45	10.4	110	19	166	NIL	NIL	PCS	-	Poor
					AT	9100	59	38	3	16	46	10.6	102	20	162	NIL	NIL	NIL		
2.	1079/ 7070	Palani 38/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	23.7.12 To 1.9.12	BT	10000	57	39	4	11	28	12	110	23	159	NIL	NIL	PCS	-	Good
					AT	9900	57	40	3	13	35	12.5	108	24	162	NIL	NIL	NIL		
3.	1219/ 1109	Ramakrishnan 42/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	7.8.12 To 15.8.12	BT	10100	62	32	6	12	32	11.6	106	36	171	NIL	NIL	FPC	-	Good
					AT	9700	60	38	2	10	20	11.8	110	28	164	NIL	NIL	NIL		
4.	1364/ 5791	Kalyani 50/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	28.8.12 To 7.9.12	BT	8800	57	40	3	8	36	11	108	23	164	NIL	NIL	FPC	-	Good
					AT	8100	60	36	4	7	28	11	110	26	157	NIL	NIL	NIL		
5.	1353/ 5570	Eswari 50/Female	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	27.8.12 To 3.9.12	BT	9500	58	37	5	14	26	9.6	116	20	163	NIL	NIL	NIL	-	Satisfactory
					AT	9300	61	36	3	10	30	9	106	23	157	NIL	NIL	NIL		

CLINICAL STUDY ON HINGU *CHOORANAM* IN, IN-PATIENTS DEPT.IN THE MANAGEMENT OF GUNMAM

SI NO	IP. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			X ray bms/ Endoscopy	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
6.	1494/ 9533	Moorthy 52/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	12.9.12 To 10.10.12	BT	8100	57	36	7	8	28	11	110	22	163	NIL	NIL	PCS	-	Poor
					AT	7400	60	37	3	10	20	10.8	120	26	162	NIL	NIL	NIL		
7.	167/ 4480	Ajmalkan 48/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	4.10.12 To 19.11.12	BT	10200	55	38	7	10	20	12.6	108	26	159	NIL	NIL	FPC	-	Good
					AT	10100	60	36	4	12	32	12	120	23	156	NIL	NIL	NIL		
8.	341/ 593	Raja 35/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	1.11.12 To 13.12.12	BT	9300	55	40	5	15	40	12.5	106	20	158	NIL	NIL	FPC	-	Moderate
					AT	9100	56	38	6	10	30	12.5	110	23	162	NIL	NIL	NIL		
9.	376/ 1785	Palani 34/Male	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	7.11.12 To 21.12.12	BT	9900	60	36	4	8	28	12.5	104	23	160	NIL	NIL	FPC	-	Good
					AT	9700	58	36	6	15	32	12.8	98	21	159	NIL	NIL	NIL		
10.	393/ 2738	Kannan 35/MMale	Epigastric pain, Heart burn, Regurgitation, vomiting, Abdominal Distension	12.11.12 To 19.12.12	BT	8300	55	38	7	15	32	12.5	94	26	163	NIL	NIL	NIL	-	Good
					AT	8100	60	36	4	12	30	12.6	90	23	160	NIL	NIL	NIL		

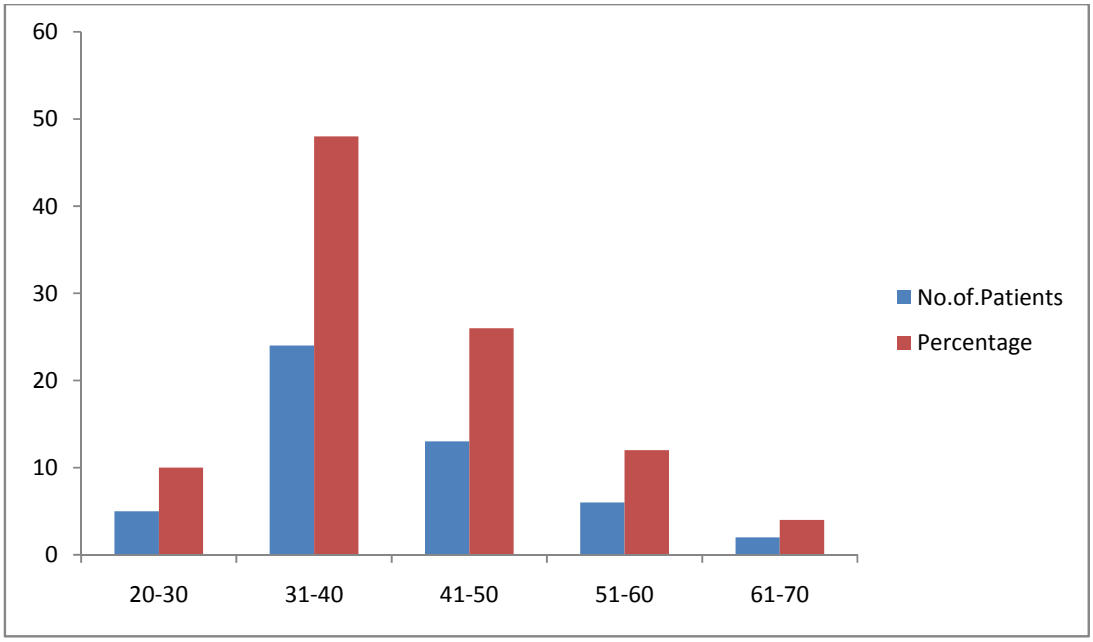
CLINICAL ASSESSMENT

AGE WISE DISTRIBUTION

Tablet no 4.5.1

SL. NO	AGE IN YEARS	NO. OF PATIENTS	PERCENTAGE (%)
1	20-30	5	10
2	31-40	24	48
3	41-50	13	26
4	51-60	6	12
5	61-70	2	4
TOTAL		50	100

AGE WISE DISTRIBUTION



Inference:

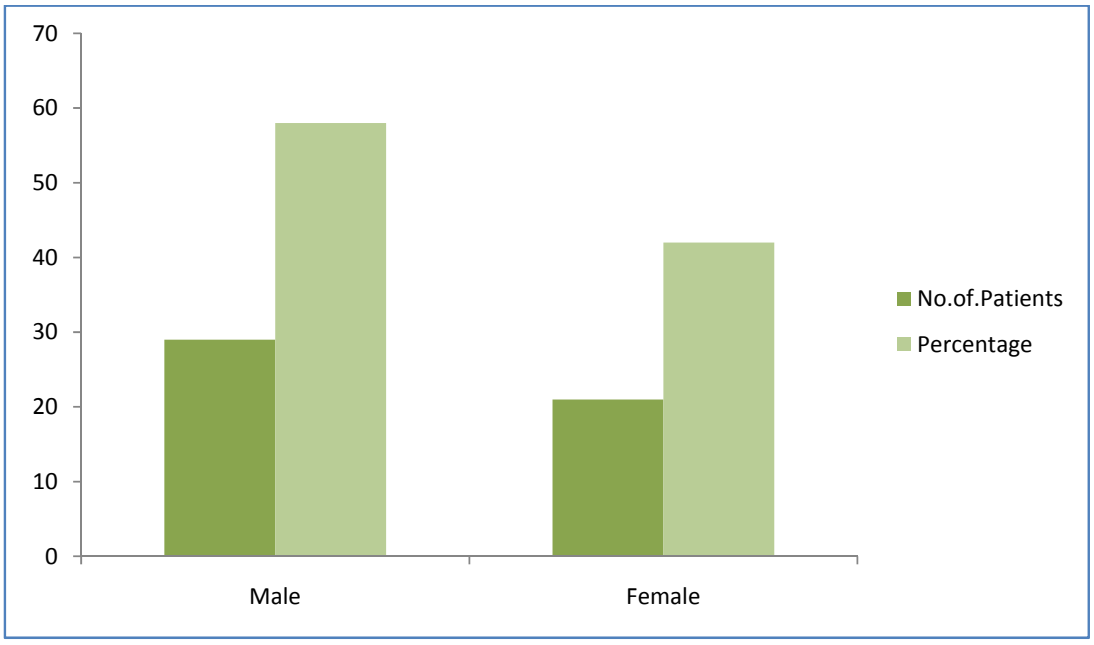
Among 50 patients,

- 5 patients belongs to the age group of 20-30 years
- 24 patients belongs to the age group of 31-40 years
- 13 patients belongs to the age group of 41-50 years
- 9 patients belongs to the age group of 51-60 years
- 2 patients belongs to the age group of 51-60 years

SEX DISTRIBUTION

Tablet no 4.5.2

SL. NO	SEX	NO. OF PATIENTS	PERCENTAGE
1	Male	29	58
2	Female	21	42



Inference:

Among 50 patients,

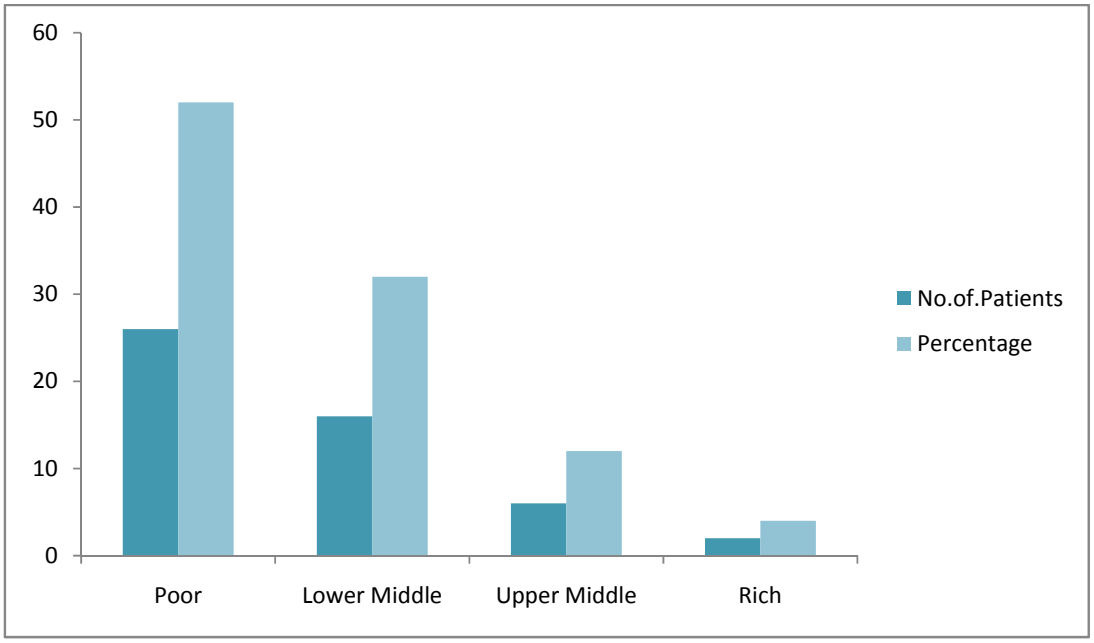
- 29 patients were male
- 21 patients were female

SOCIO-ECONOMIC STATUS

Tablet no 4.5.3

SL. NO	SOCIO–ECONOMIC STATUS	NO. OF PATIENTS	PERCENTAGE (%)
1	Poor	26	52
2	Lower middle	16	32
3	Upper middle	6	12
4	Rich	2	4
TOTAL		50	100

SOCIO-ECONOMIC STATUS



Inference:

Among 50 patients,

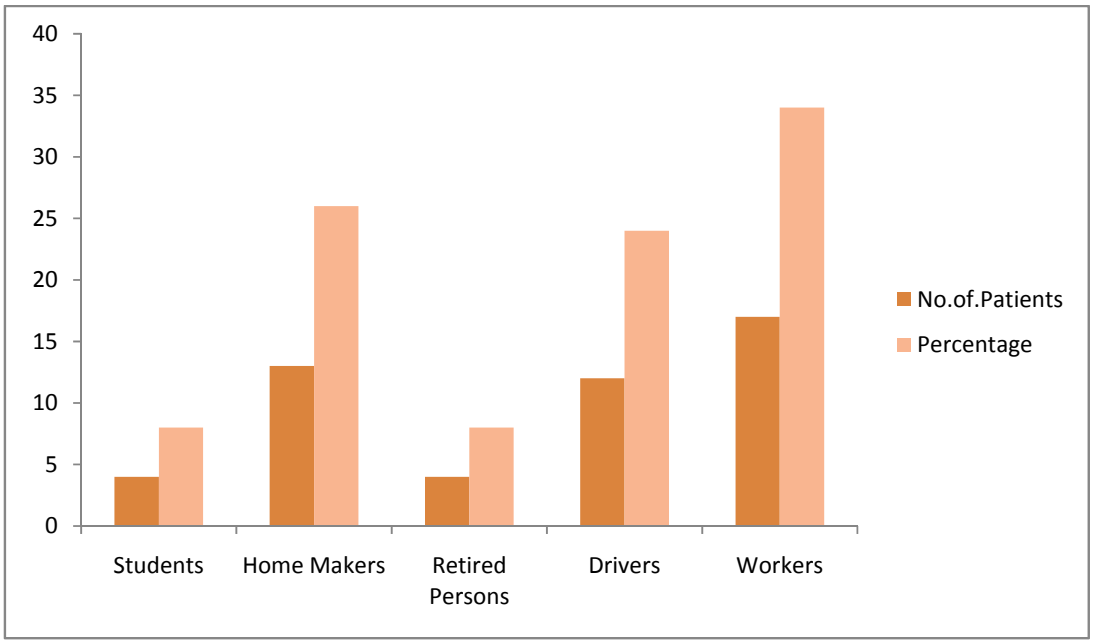
- 26 patients were poor.
- 16 patients were lower-middle.
- 6 patients were upper middle.
- 2 patients were rich.

OCCUPATIONAL STATU

Tablet no 4.5.4

SL. NO	OCCUPATION	NO. OF PATIENTS	PERCENTAGE (%)
1	Students	4	8
2	Home makers	13	26
3	Retired persons	4	8
4	Drivers	12	24
5	Workers	17	34
TOTAL		50	100

OCCUPATIONAL STATUS



Inference:

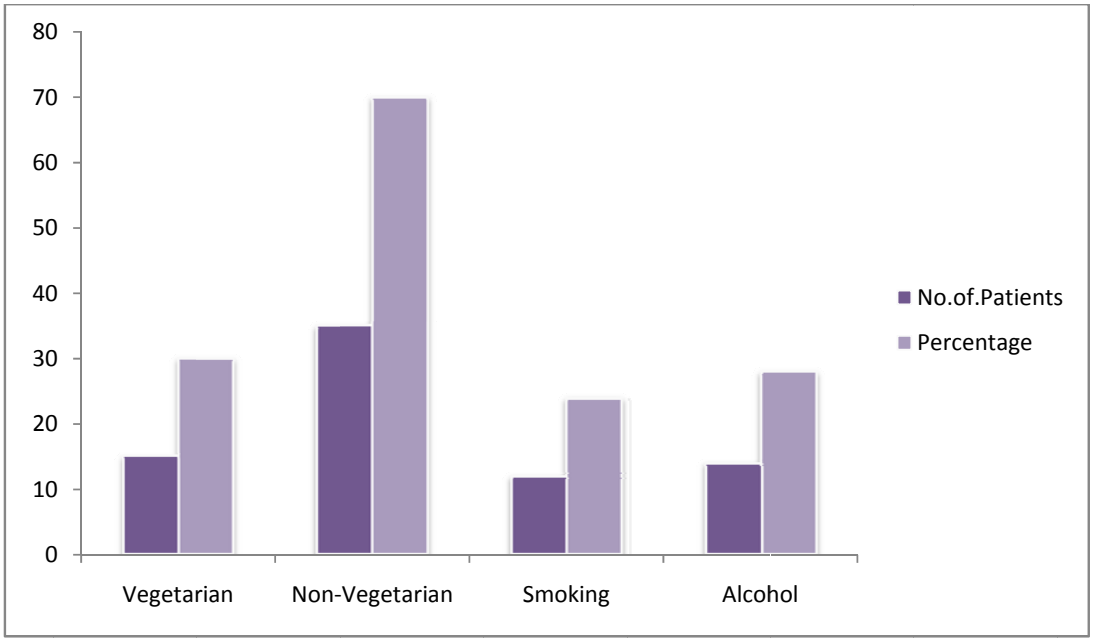
Among 50 patients,

- 4 (8%) patients were Students.
- 13 (26%) patients were Home makers.
- 4 (8%) patients were Retired persons.
- 12 (24%) patients were Drivers.
- 17 (34%) patients were Workers.

PERSONAL HABITS

Tablet no 4.5.5

SL. NO	PERSONAL HABITS	NO. OF PATIENTS	PERCENTAGE (%)
1	Vegetarian	15	30
2	Non-vegetarian	35	70
3	Smoking	12	24
4	Alcohol	14	28



5. RESULTS AND DISCUSSION

The well documented Siddha herbo – mineral drug *Hingu chooranam* had been subjected to various studies to establish the works of *Siddhars* to be true. Here, various studies have been carried out in this study drug. The study includes literary collections, physico and Phyto chemical analysis, toxicological study, pharmacological study, and clinical study. The drug has been selected for the treatment of *Peptic ulcer* in reference with *SARABENDHIRAR VAIDHYA MURAIGAL – GUNMAROGA SIGICHAI.*

Literary Review of *Hingu chooranam:*

Hingu chooranam is a herbo mineral drug which contains 8 drugs. In the siddha literature " *Gunapadam mooligai* and *thaadhu vaguppu*" all drugs are indicated for *Gunmam*. That is Sodium chloride impure and *plumbago zylanica* indicated for *Atta gunmam. Ferula asafoetida, Cuminum cyminum, Acorus calamus, Zingiber officinale and Terminalia chebula* are indicated for *Gunmam. Costus speciosus* indicated for *viranum*. So Hingu chooranam is most effective for peptic ulcer.

4.2.1 physico-chemical analysis:

REPORT OF HINGU CHOORANAM

Table : 4.2.1.1

S.No	Parameter	Mean Value
1.	Loss on Drying at 105°C	8.098 %
2.	Total Ash	12.197 %
3.	Acid insoluble Ash	0.89 %
4.	Water Soluble Extractive	33.3 %
5.	Alcohol Soluble Extractive	23.95 %
6.	Particle size	44
7.	pH	6.0

Physico-chemical analysis revealed that the Ash and Acid insoluble Ash value were with in limits. In indicates the purity of sample.

4.2.1.2 TLC Estimation of Hingu chooranam :

Figure no : 4.2.1.2

After spray with visualizing agent

Table : 4.2.1.2

Sl.No	After Dipping in Vanillin-Sulphuric acid	
	Rf value	**Colour of the spot**
1	0.24	Purple
2	0.31	Purple
3	0.40	Purple
4	0.49	Purple
5	0.55	Purple
6	0.65	Purple
8	0.82	Blue

Thin Layer Chromotography is utilised for accurate identification and adulterant of the plant drug.. Identification was effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. The visual comparison of the size and intensity of the spots supported in semi-quantitative estimation of plant.

Standardization of drugs aids in confirmation of identity and determination of quality, effectiveness of *Hingu chooranam.*

4.2.1.3. Fourier transform infrared spectroscopy (FTIR)

FTIR results of *Hingu chooranam*

3358 cm^{-1} - Monomeric -- Alcohols, Phenols (O – H stretching) Hydrogen-bonded -- Alcohols, Phenols

2925.4 cm^{-1} - Alkyl (C-H stretching)

2119.9 cm^{-1} - Carboxylic acids (O-H stretching)

1636 cm^{-1} - Amines (N-H stretching)

1438 cm^{-1} - Alkanes (C-H stretching)

1159.2 cm^{-1} - Alcohols, Ethers, Carboxylic acids, Esters (C – O stretching)

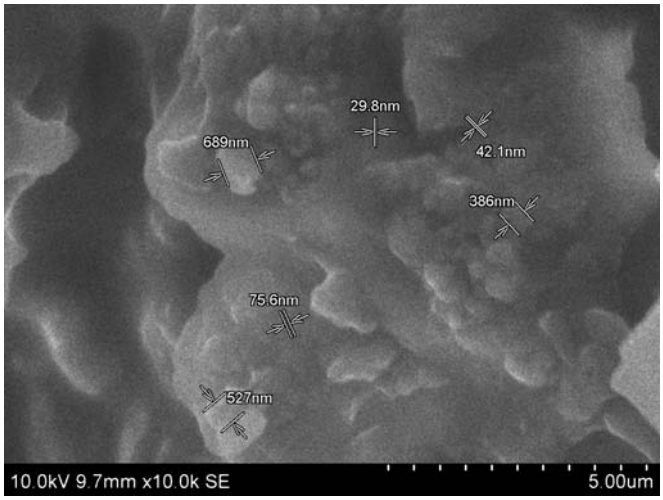
1030.7 cm^{-1} - Amines (C – N stretching)

868.7 cm^{-1} - Aromatic (C –H stretching)

817.9cm^{-1} - Aromatic (C-H Bending)

4.2.1.4. Scanning electron microscope (sem):

Figure no :4.2.1.4



Results:

SEM picture shows Nano particle (Micro level) size of the sample.

Physical properties of known elements and materials can change as their surface to area ratio is dramatically increased, i.e. when nanoscale sizes are achieved. These changes do not take place when going from macro to micro scale. Changes in physical properties such as colloidal properties, solubility and catalytic capacity have been found very useful in areas of bioremediation and drug delivery. The extremely small size of nanoparticles allows them to penetrate cells and interact with cellular molecules. Due to nanoparticle size a low dose of the drug can cure the diseases.

4.2.2 qualitative phytochemical analysis:

Results and discussion

Table : 4.2.2

Qualitative Phytochemical Tests		
1.	Alkaloids	- ve
2.	Anthraquinone	+ ve
3.	Flavonoids	- ve
4.	Triterpenes	+ ve
5.	Steroids	+ ve
6.	Phenol	+ ve
7.	Tannin	+ ve
8.	Saponin content	- ve
9.	Coumarin	+ ve
10.	Cardiac glycoside	- ve

Discussion :

Tannin have anti- ulcer activity, anti- Helicobacter pylori activity and anti-oxidant activity (Neyres Zinia Taveira de Jesus 2012)

Tannins are used in peptic ulcer disease because of their astringent properties. These properties are due to the fact that tannins react with the tissue proteins . In peptic ulcers, this tannin-protein complex layer protects the stomach by promoting greater resistance to chemical and mechanical injury or irritation. Tannins present antioxidant activity, promote tissue repair, exhibit anti *Helicobacter pylori* effects, and also involved in gastrointestinal tract anti-inflammatory processes.

(2002). Anthraquinone have anti biotic with anti- Helicobacter pylori activity Tanguchi M et, al.,

Triterpenes have anti –ulcer activity (Queirogo CL et, al., 2000)

Steriods have anti –ulcer activity (Ahmad Aet, al., 2012)

Coumarin have anti –ulcer activity (Goel RKet,al., 1997)

Saponin have anti –ulcer activity (R Gadekaret,al., 2010)

4.2.3 chemical analysis of Hingu chooranam :

Results:

The bio-chemical analysis of *Hingu chooranam* showed the following chemicals, Phosphate, Sulphate, Chloride, Iron, Tannin, Zinc, Protein, Starch, Sugar and Potassium present.

Sodium, potassium, chloride and Calcium regulates the acid – base balance of the body and preserves the permeability of cells , hence helps to balance the aggressive and protective factors of ulcer by protecting mucosal layer. (Crystal kaczkowski, 2002).

Zinc is extremely important in digestive system. It is required for all digestive enzyme production. It is also required to rebuild the fast-growing intestinal tissue, and for the production of bile, and liver and pancreatic secretions. Ulcers, irritable bowel syndrome, yeast infections, colitis, and many other digestive problems often have to do with low zinc. (Lawrence Wilson, 2012)

Potassium is essential for the maintaining gastric secretions.

Presence of Sodium, Potassium, Calcium, Ferrous and Phosphate aids in mucosal protection and heals ulcer.

4.3. Toxlogical study

Results

All the animals from control and all the treated dose groups up to 400 mg/kg survived throughout the dosing period of 28 days. No signs of major or significant intoxication were observed in animals from lower to higher dose groups during the dosing period of 28 days. Animals from all the treated dose groups exhibited comparable body weight gain with that of controls throughout the dosing period of 28 days. Food consumption of control and treated animals was found to be comparable throughout the dosing period of 28days.

The results of haematological investigations on day 28, revealed following significant changes in the values of different parameters investigated when compared with those of respective controls; However, the increase or decrease in the values obtained was within normal biological and laboratory limits. Results of Biochemical investigations revealed the following significant changes in the values of different parameters studied when compared with those of respective controls; however, the values obtained were within normal biological and laboratory limits.

Ophthalmoscopic examination, conducted prior to and at the end of dosing period on animals from control and all the treated dose groups did not reveal any abnormality. Functional observation tests conducted at termination revealed no abnormalities. Urine analysis, conducted at the end of the dosing period revealed no abnormality attributable to the treatment. Organ weight data of animals sacrificed at the end of the dosing period was found to be comparable with that of respective controls. Gross pathological examination of animals in control as well as the treated groups did not reveal any abnormalities.

Conclusion :

Based on these findings, no toxic effect was observed upto 400mg/kg of Hingu Chooranam treated via oral route over a period of 28 days. So, it can be concluded that the Hingu Chooranam can be prescribed for therapeutic use in human with the dosage recommendations of upto 400mg/kg. body weight p.o.

Table 4.3.1: Dose finding experiment and its behavioral Signs of Toxicity

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2000	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	5000	+	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-

1. Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhoea 18. Writhing 19. Respiration 20. Mortality

Table4.3.2. Body wt (g) of albino rats exposed to Hingu Chooranam for 28days.

Dose (mg/kg/day)	Days				
	1	7	14	21	28
Control	124.04±5.25	125.54±6.00	124.42±5.28	130.00±6.14	133.01±5.02
100	127.05±4.38	129.28±5.15	132.10±5.54	135.23±5.10	136.45±6.04
200	124.20±5.00	128.21±6.88	132.00±4.16	134.14±5.11	137.88±5.18
400	122.10±5.12	125.52±5.34	131.14±4.41	133.22±6.00	134.54±5.14

Values are mean of 6 animals ± S.E.M. (Dunnett's test). $^{ns}P>0.05$.

Table 4.3.3. Food (g/day) intake of rats exposed to Hingu Chooranam for 28days.

Dose (mg/kg/day)	Days (gms/rats)				
	1	7	14	21	28
Control	44.12±2.48	44.22±2.14	46.10±2.17	45.86±2.52	47.47±3.22
100	42.20±2.54	45.34±2.48	46.41±2.46	49.17±2.64	48.18±3.40
200	40.32±2.17	42.06±2.52	44.64±2.44	45.62±3.18	46.04±3.18
400	43.14±2.62	45.24±2.43	46.18±2.71	45.10±2.04	45.02±3.11

Values are mean of 6 animals ± S.E.M. (Dunnett's test). $^{ns}P>0.05$.

Table 4.3.4 Water (ml/day) intake of rats exposed to Hingu Chooranam for 28days.

Dose (mg/kg/day)	Days(ml/rat)				
	1	**7**	**14**	**21**	**28**
Control	55.46±2.34	52.20±3.32	53.25±3.12	52.34±3.14	51.22±3.22
100	52.21±2.40	50.28±3.04	45.24±3.02	46.14±3.00	40.56±2.48*
200	49.44±2.18	40.44±3.70	40.71±3.36	42.15±2.90	41.14±3.24
400	52.14±3.25	54.26±3.25	51.25±3.42	48.40±3.14	45.21±3.06

Values are mean of 6 animals ± S.E.M. (Dunnett's test). *P<0.05.

Table 4.3.5. Hematological parameters after 28days treatment with Hingu Chooranam in rats.

Parameter	**Control**	**100 mg/kg**	**200 mg/kg**	**400 mg/kg**
Red blood cell (mm^3)	8.11±0.62	8.12±0.45	8.12±0.55	8.00±0.50
HB (%)	14.20±0.41	15.14±0.30	14.13±0.48	15.11±0.44
Leukocyte ($x10^6$/mL)	10445±110.12	10502±120.45	10400±136.20	10378±117.23
Platelets/ul	1212±40.10	1291±35.44	1134±38.12	1205±30.40
MCV (gl)	54.42±5.00	53.53±4.88	55.42±5.12	54.42±4.96
N	45.22±1.12	45.23±1.20	44.18±0.92	45.51±2.00
L	25.32±2.82	20.10±3.14	23.58±3.24	26.28±3.80
M	2.20±0.32	2.10±0.30	2.20±0.28	2.25±0.22
E	1.00±0.00	1.0±0.20	1.0±0.13	1.00±0.11
B	0	0	0	0
ESR(mm)	1±00	1±00	1±00	1±00
PCV	46.23±2.25	45.41±2.16	45.14±3.04	45.52±3.41

Values are mean of 6 animals ± S.E.M. (Dunnett's test). ^{ns}P>0.05.

Table 4.3.6. Effect of treatment with Hingu Chooranam biochemical parameters.

Dose (mg/kg)	Control	100 mg/kg	200 mg/kg	400 mg/kg
Total Bilirubin (mg/dL)	0.211±0.05	0.214±0.06	0.213±0.05	0.215±0.06
D. Bilirubin (mg/dL)	0.1±0.04	0.1±0.05	0.1±0.04	0.1±0.05
ALP (U/L)	286.30±10.12	274.25±10.26	280.13±10.11	290.21±10.30
SGOT (U/L)	168.24±6.21	160.67±6.58	156.38±5.80	154.01±5.15
SGPT(U/L)	45.2±2.30	44.2±3.24	45.00±2.50	46.22±3.10
Total Protein(g/dl)	10.00±1.23	9.88±0.31	9.02±0.20	9.14±0.30
Albumin(g/dl)	3.22±0.25	3.12±0.29	3.40±0.33	3.42±0.14
Globulin(g/dl)	6.00±0.28	5.72±0.28	4.84±0.26*	4.80±0.25*

Values are mean of 6 animals ± S.E.M. (Dunnett's test). *P<0.05; Vs. Control

Table-4.3.7 RFT

Dose (mg/kg)	Control	100 mg/kg	200 mg/kg	400 mg/kg
Urea (mg/dL)	55.00±1.42	54.11±2.00	55.00±2.04	54.10±1.88
Creatinine (mg/dL)	0.75±0.05	0.74±0.05	0.75±0.06	0.74±0.05
Uric acid (mg/dL)	1.7±0.16	1.6±0.15	1.6±0.12	1.6±0.15
Na m.mol	142.70±5.42	141.8±5.02	141.10±4.32	141.10±4.08
K m.mol	20.10±2.88	19.40±1.62	20.20±1.42	20.14±2.00
Cl m.mol	102.00±4.68	100.11±5.32	99.28±4.28	101.00±5.11

Values are mean of 6 animals ± S.E.M. (Dunnett's test). ^{ns}P>0.05.

Table-4.3.8. Lipid Profile

Dose (mg/kg)	Control	100 mg/kg	200 mg/kg	400 mg/kg
Total cholestrol(mg/dL)	42.55±2.52	41.46±2.40	40.54±3.05	41.00±3.02
HDL(mg/dL)	13.20±1.32	13.24±1.70	13.12±2.30	13.18±2.23
LDL(mg/dL)	43.11±2.35	44.52±3.00	44.12±3.28	43.40±3.25
VLDL(mg/dl)	16.20±1.28	15.22±1.30	16.00±1.42	15.41±1.20
Triglycerides (mg/dl)	86.20±2.02	85.62±2.22	86.00±2.21	87.24±2.32
TC/HDL ratio (g/dl)	3.50±0.25	3.40±0.24	3.37±0.33	3.45±0.28
Blood glucose(mg/dl)	125.22±4.75	126.02±4.29	126.32±5.00	125.12±4.52

Values are mean of 6 animals ± S.E.M. (Dunnett's test). ^{ns}P>0.05.

Table-4.3.9 Urine Analysis

Parameters	Control	100 mg/kg	200 mg/kg	400 mg/kg
Colour	Yellow	Yellow	Yellow	Yellow
Transparency	Clear	Slightly turbid	cloudy	Slightly turbid
Specific gravity	1.010	1.010	1.010	1.010
PH	>7.2	>8.0	>8.0	>9.0
Protein	Nil	3+	3+	3+
Glucose	Nil	Nil	Nil	Nil
Bilirubin	-ve	-ve	-ve	-ve
Ketones	-ve	+ve	+ve	+ve
Blood	Absent	Absent	Absent	Absent
Urobilinogen	Normal	Abnormal	Abnormal	Abnormal
Pus cells	0-cells/HPF	1-cell/HPF	2-cells/HPF	1-cell/HPF
RBCs	Nil	Nil	0-1cells/HPF	Nil
Epithelial cells	Nil	1-cell/HPF	Nil	1-cell/HPF
Crystals	Nil	Nil	Nil	Nil
Casts	Nil	Nil	Nil	Nil
Others	Bacteria seen	Bacteria seen	Bacteria seen	Bacteria seen

Table 4.3.10. Effect of oral administration of a Hingu Chooranam on organ weigh

Dose (mg/kg)	Control	100 mg/kg	200 mg/kg	400 mg/kg
Liver (g)	5.24±0.14	5.25±0.12	4.26±0.14**	4.12±0.15**
Heart (g)	0.61±0.04	0.60±0.05	0.57±0.04	0.59±0.04
Lung (g)	1.47±0.16	1.48±0.14	1.46±0.13	1.50±0.11
Spleen (g)	0.63±0.05	0.65±0.04	0.64±0.04	0.62±0.05
Ovary (g)	1.65±0.14	1.70±0.16	1.67±0.15	1.71±0.15
Testes (g)	1.45±0.14	1.46±0.12	1.45±0.15	1.47±0.14
Brain (g)	1.54±0.16	1.52±0.12	1.56±0.12	1.54±0.15
Kidney (g)	0.72±0.04	0.71±0.04	0.72±0.04	0.71±0.05
Stomach (g)	1.34±0.14	1.35±0.11	1.34±0.15	1.33±0.10

Values are mean of 6 animals ± S.E.M. (Dunnet's test). **P<0.01 Vs control

HISTOPATHALOGICAL FEATURES

LOW **MID** **HIGH**

Bone

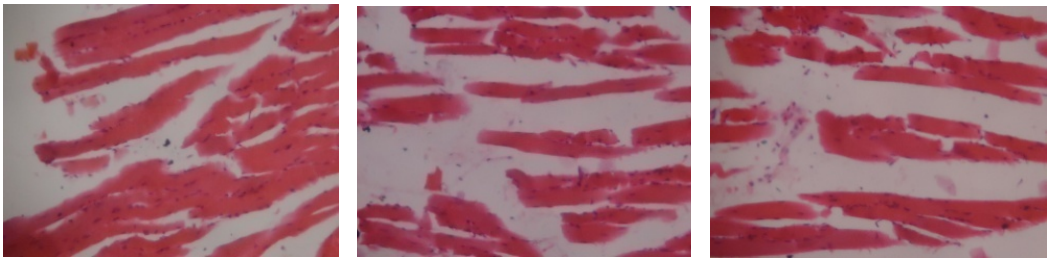


Fig 4.3.1

Brain

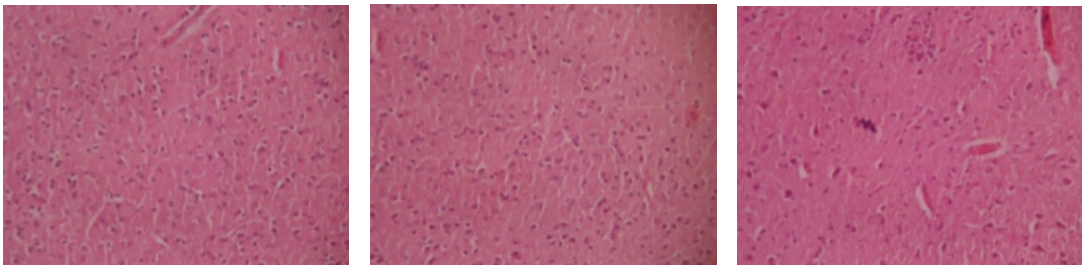


Fig 4.3.2

Heart

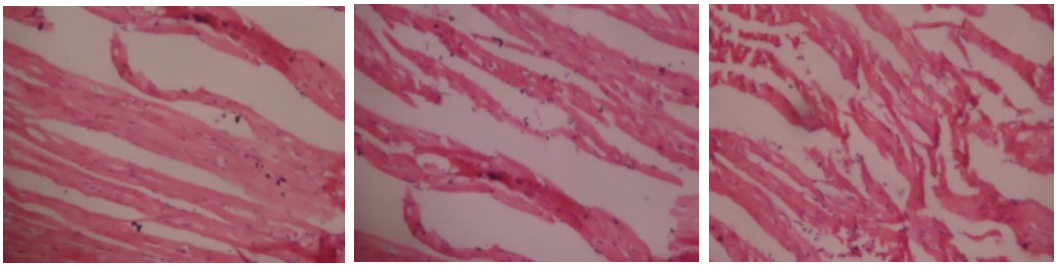


Fig 4.3.3

Intestine

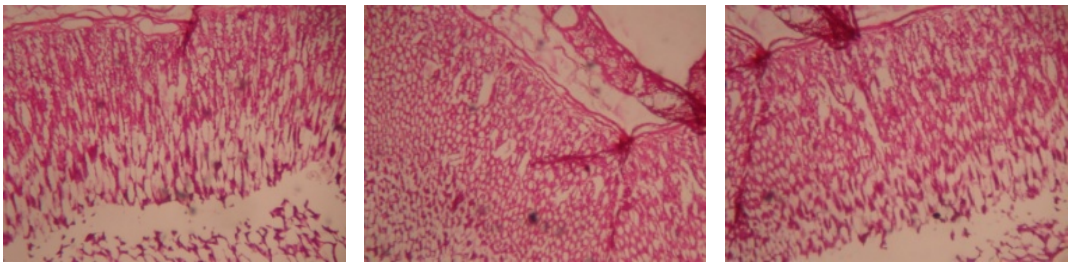


Fig 4.3.4

LOW **MID** **HIGH**

Kidney

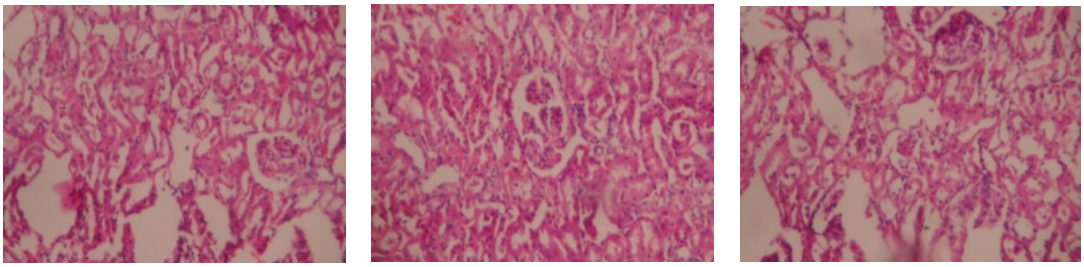


Fig 4.3.5

Liver

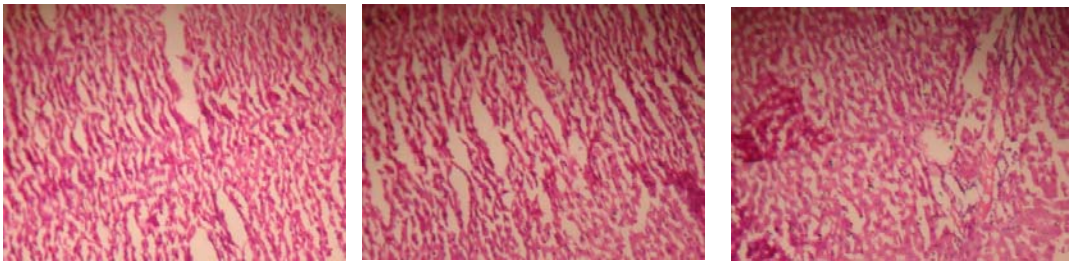


Fig 4.3.6

Lung

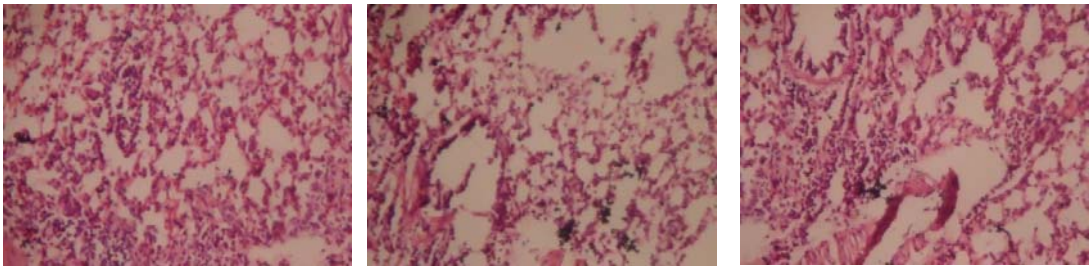


Fig 4.3.7

Ovary

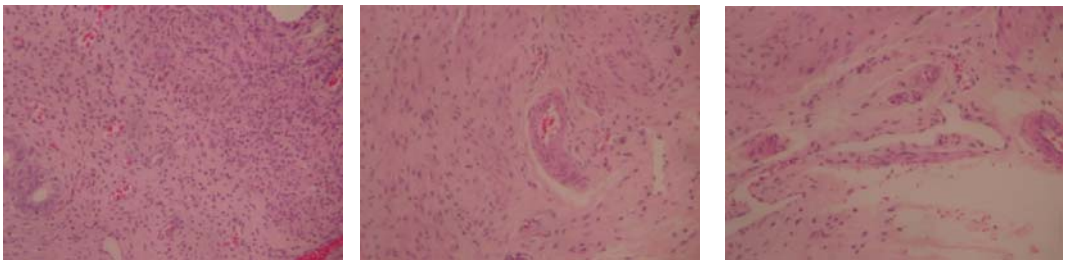


Fig 4.3.8

LOW **MID** **HIGH**

Pancreas

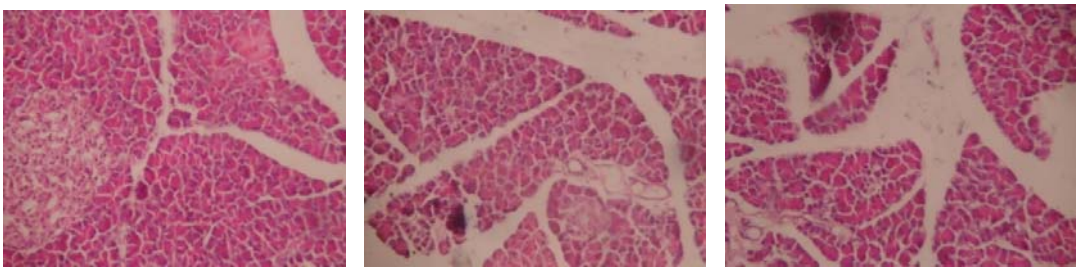


FIG 4.3.9

Spleen

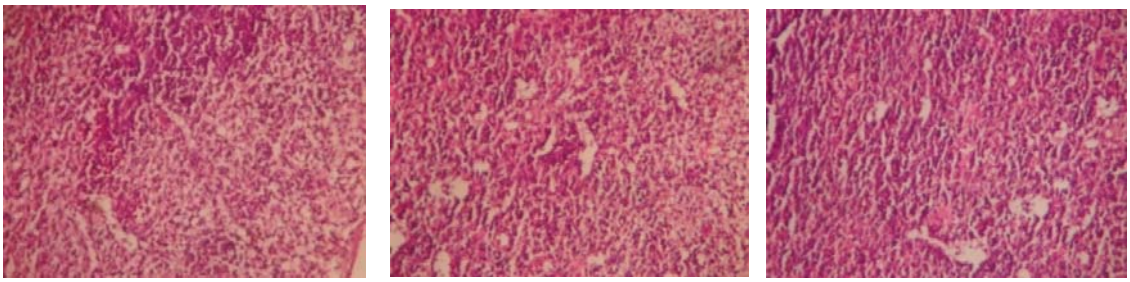


Fig 4.3.10

Stomach

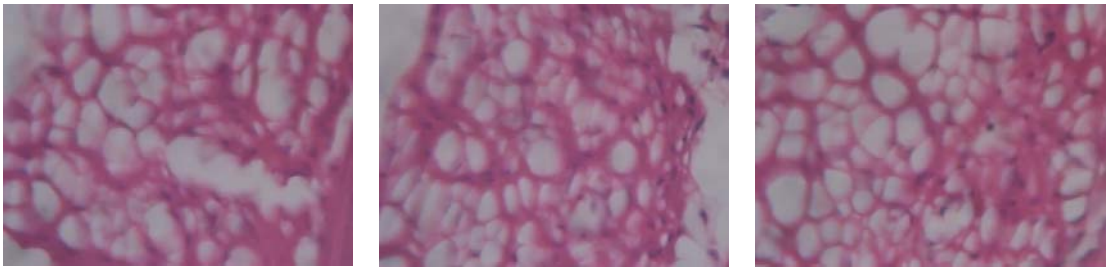


Fig 4.3.11

Testis

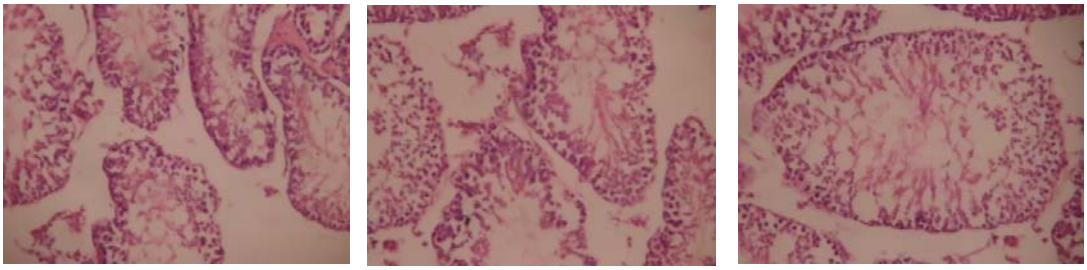


Fig 4.3.12

4.4. PHARMACOLOGICAL STUDY:

Antiulcer property of *Hingu chooranam*:

Results and discussion:

Peptic ulcer disease is a serious gastrointestinal disorder that requires a well targeted therapeutic strategy. A number of drugs including proton pump inhibitors and H2 receptor antagonists are available for the treatment of peptic ulcer, but clinical evaluation of these drugs has shown incidence of relapses, side effects, and drug interactions. This has been the rationale for the development of new antiulcer drugs and the search for novel molecules has been extended to herbal drugs that offer better protection and decreased relapse. This study revealed a significant anti-ulcer effect of *Hingu Chooranam* in experimental animals induced by a non-steroidal drug, Aspirin.

Synthetic NSAIDs like aspirin cause mucosal damage by interfering with prostaglandin synthesis, increasing acid secretion and back diffusion of H+ ions. Aspirin is a potent inhibitor of prostaglandin biosynthesis. Prostaglandins are known to play an important role in maintaining mucosal integrity. Under our experimental conditions, different doses *of Hingu Chooranam* altered the gastric mucosal lesions compared to the control. Anti-inflammatory drug Aspirin administered in toxic doses (200mg/kg), produce visible gastric ulcers in animals.

An Increase in certain endogenous prostaglandins can enhance gastric mucosal resistance to ulcerogenic agents. The mechanisms involved in prostaglandin action are multiple, including stimulation of mucus and bicarbonate output, gastric mucosal blood flow, decreasing gastric motility, increasing the release of endogenous mediators of gastric injury vasoactive amines and leucotrienes and stimulation of cellular growth and repair. Although in most of the cases the etiology of the ulcers is unknown, it is generally accepted that they are a result of an imbalance between aggressive factors and the maintenance of mucosal integrity through endogenous defensive mechanisms.

In our investigation, the effect of the *Hingu Chooranam* on prostaglandin biosynthesis was not evaluated, but an increase in resistance to the necrotizing effect of Aspirin was noted. *Hingu Chooranam* is one of the siddha drug used in the present study to evaluate the anti-ulcerogenic potency in aspirin induced ulcers in rats. From the results obtained, it was observed that, there was decrease in percent of incidence of ulcer and ulcer index in a dose dependent manner when compared with control group. So it was considered that the *Hingu Chooranam* has significantly decreased the ulceration in Aspirin induced ulcers in rats.

Table 4.4.1: Dose finding experiment and its behavioral Signs of Toxicity

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2000	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	5000	+	+	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-

1. Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhoea 18. Writhing 19. Respiration 20. Mortality

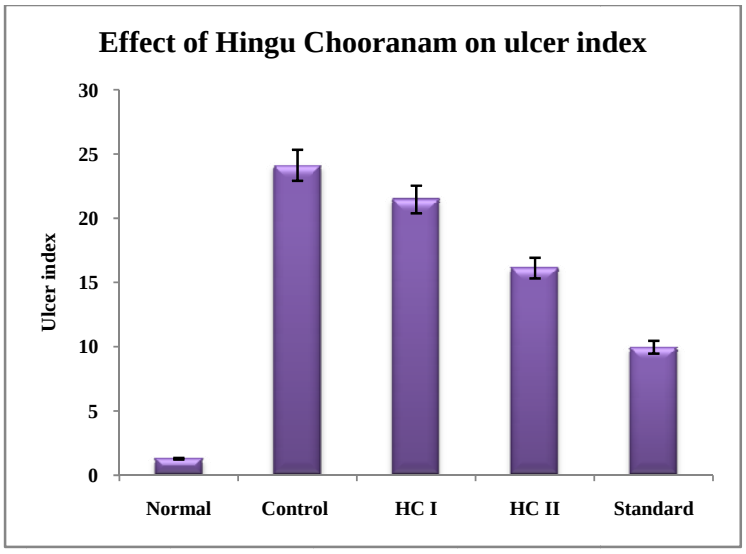
Table 4.4.2— Effect of Hingu Chooranam on ulcer index

Groups	Ulcer index
Normal	1.28±0.02**
CMC control	24.12 ± 0.28
HC (100mg/kg)	21.46 ± 0.24**
HC (200mg/kg)	16.12 ± 0.24**
Ranitidine (60mg/kg)	9.96 ± 0.14**

*P values <0.05 as compared to control;

Values are the mean ± S.E.M. of six rats/treatment.

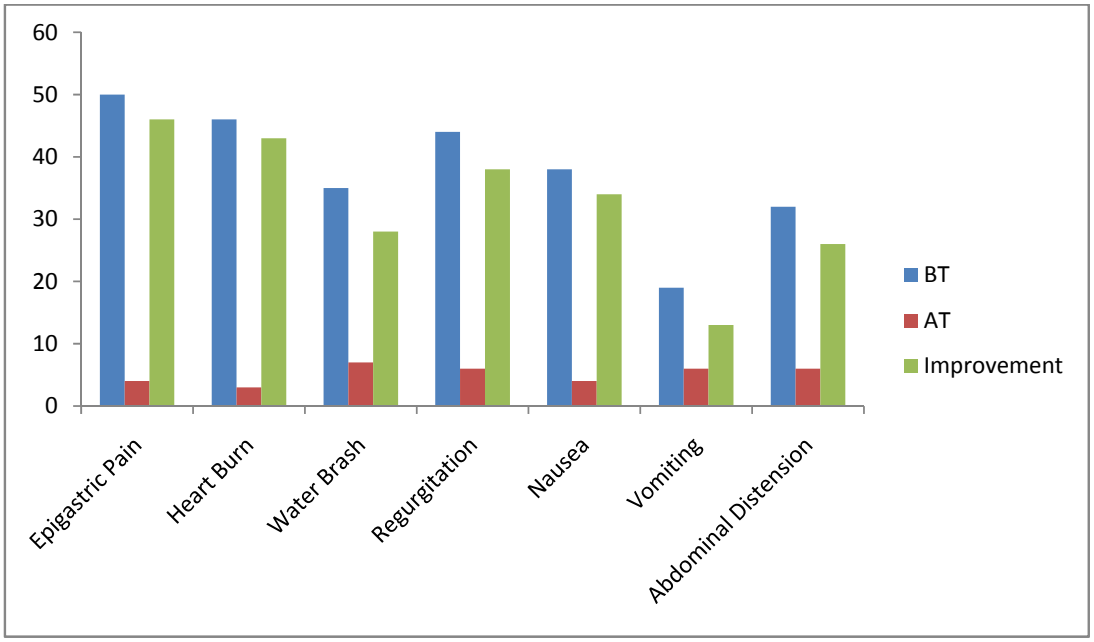
Significance *p <0.05, **p<0.01 Vs Control.



4.5. CLINICAL ASSESMENT

Table: 4.5.1 IMPROVEMENTS IN SIGNS AND SYMPTOMS

SL. NO	SIGNS AND SYMPTOMS	NO. OF PATIENTS			
		BT	AT	IMP.	IMPROVEMENT (%)
1	Epigastric pain	50	4	46	92
2	Heart burn	46	3	43	93
3	Water brash	35	7	28	80
4	Regurgitation	44	6	38	86
5	Nausea	38	4	34	89
6	Vomiting	19	6	13	68
7	bdominal distension	32	6	26	81



Inference:

Among 50 patients,

- 45 out of 50 patients were relieved from Epigastric pain.
- 43 out of 47 patients were relieved from heart burn.
- 29 out of 37 patients were relieved from Water brash
- 39 out of 45 patients were relieved from regurgitation.
- 34 out of 39 patients were relieved from nausea.
- 12 out of 18 patients were relieved from vomiting.
- 24 out of 30 patients were relieved from abdominal distension.
- 23 out of 28 patients were relieved from Constipation

Table 4.5.2 GRADATION RESULT

SL. NO	LEVEL OF IMPROVEMENT	NO.OF PATIENTS	PERCENTAGE (%)
1	Good	36	72
2	Satisfactory	5	10
3	Moderate	7	14
4	Poor	2	4
TOTAL		50	100

GRADATION RESULT

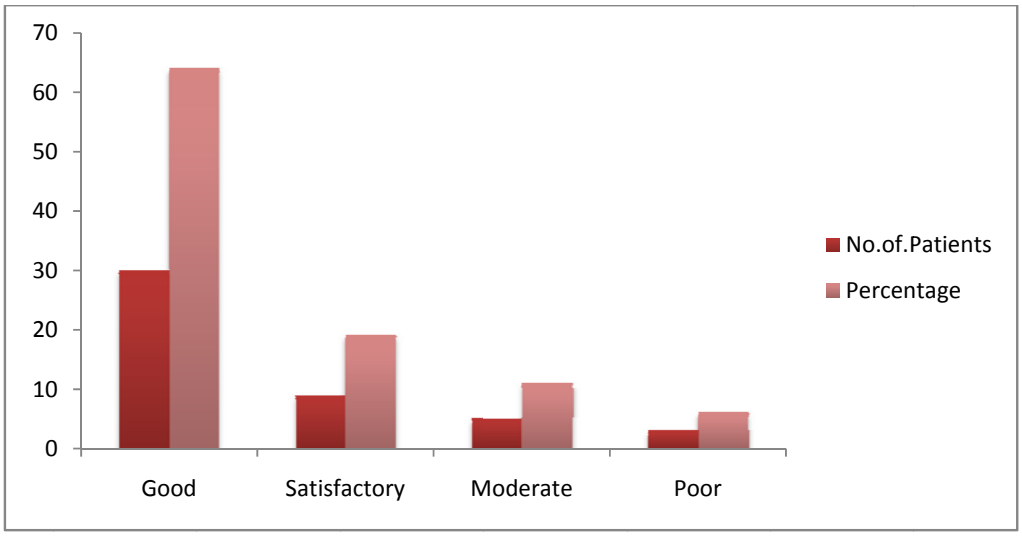
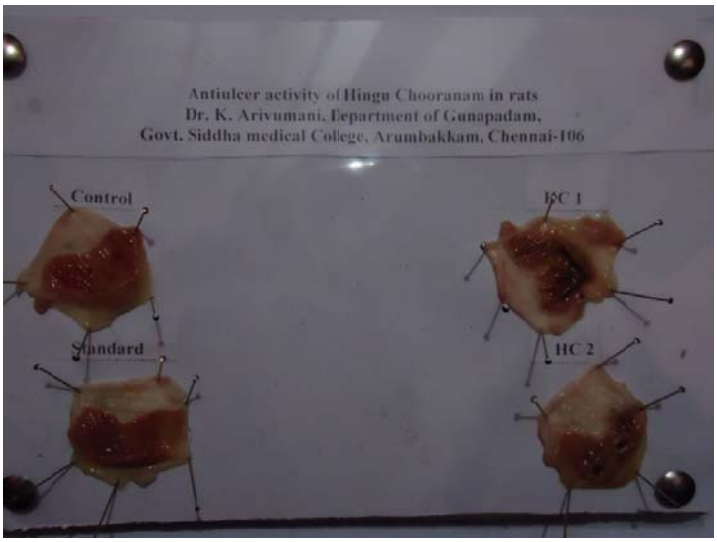


Figure no :4.4



ANTI-ULCER ACTIVITY

STATISTICAL ANALYSIS

PAIRED "t" TEST RESULT:

P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The mean of Group One minus Group Two equals 5.14

95% confidence interval of this difference: From 3.79 to 6.50

Intermediate values used in calculations:

t = 9.2952

df = 6

standard error of difference = 0.553

Table: 4.5.3

	Sign & Symptoms	Mean	S.D.	S.E.M
Before Treatment	7	37.71	10.40	3.93
After Treatement	7	32.57	11.361	4.28

From the table we calculated the descriptive statistic like Mean, S.D & S.E.M of Mean for the improvement score before and after treatment

"t" Table: 4.5.4

t-Table	S.D	"t" Value	"p" Value
Pre vs Post	0.553	9.2952	0.0001

The two-tailed P value is lessthan 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

Result and discussion:

Improvements of signs and symptoms by statistical analysis shows the two tailed "p" value equals 0.0001, by conventional criteria, this difference is considered to be extremely statistically significant. From the above results $p < 0.05$, it shows the improvement in the subjective parameters produced by *Hingu chooranam* statistically significant.

6. CONCLUSION

The trial drug *Hingu chooranam is* selected from the classical siddha literature *Sarabendhirar vadhya muraigal- Gunmaroga sigichai* by for the evaluation of safety and efficacy of Peptic Ulcer Disease.

The trial drug was identified and authenticated by the gunapadam experts.

The drug is easily available. Then preparation and preservation of the drug is easy and also economical.

The literary reviews along with Phytochemical, chemical constituents, supports the efficient activity of the drug, Standardisation of the drug was done by physico chemical analysis.

Hingu chooranam is a herbo mineral drug which contains 8 drugs. In the siddha literature " Gunapadam mooligai and thaadhu vaguppu" all drugs are indicated for Gunmam

Tannins are used in peptic ulcer disease because of their astringent properties. These properties are due to the fact that tannins react with the tissue proteins . In peptic ulcers, this tannin-protein complex layer protects the stomach by promoting greater resistance to chemical and mechanical injury or irritation. Tannins present antioxidant activity, promote tissue repair, exhibit anti *Helicobacter pylori* effects, and also involved in gastrointestinal tract anti-inflammatory processes.

The presence of Triterpenes, Steroids, Anthraquinine, Saponin and Coumarin in *Hingu chooranam* is most effective for peptic ulcer disease .Because of these promote anti –ulcer activity.

Zinc is extremely important in ulcers, irritable bowel syndrome,
yeast infections, colitis, and many other digestive problems.

The trial drug was subjected to pharmacological, clinical studies were analysed that the trial drug has potent Anti Ulcer activity.

The clinical study showed improvement in the symptoms like epigatric pain, heart burn, epigatsric tenderness, nausea and vomiting, abdominal discomfort, loss of appetite, constipation etc. The results were found to be good in 72% of patients, satisfatory in 10% of patients , moderate in 14% of patients and poor in 4% of patients. Statistical analysis shows p value < 0.05 which is considered very statistically significant.

No adverse effects were produced during the entire clinical study.

From the above observation, I conclude that the *Hingu chooranam* is most effective for Peptic ulcer disease *(Gunmam*).

7. SUMMARY

Herbo- mineral drug *Hingu chooranam was* prepared as per Sasthrik method and evaluate the Anti – ulcer activity, and to prove its efficacy and safety in peptic ulcer disease.

Hingu chooranam is a herbo mineral drug which contains 8 drugs. In the siddha literature " *Gunapadam mooligai* and *thaadhu vaguppu*" all drugs are indicated for Gunmam

The *Hingu chooranam* was subjected to various process of like phytochemical, chemical and physico-chemical analysis to report the creditability of drug

The physico chemical analysis expressed the presence of calcium, potassium, magnisum, zinc, Iron which is known well for its ulcer curing property.

The pharmacological analysis showed that the drug has got significant Anti ulcer activity.

The clinical study showed improvement in the symptoms like epigatric pain, heart burn, epigatsric tenderness, nausea and vomiting, abdominal discomfort, loss of appetite, constipation etc. The results were found to be good in 72% of patients, satisfatory in 10% of patients , moderate in 14% of patients and poor in 4% of patients. Statistical analysis shows p value < 0.05 which is considered very statistically significant

This present study suggests that *Hingu Chooranam* has the remarkable medicinal value against the disease Peptic ulcer without any adverse effect.

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Form: I

CONSENT FORM

I certify that I have disclosed all the details about the study in the terms readily understood by the patient.

DATE: **SIGNATURE**

NAME

CONSENT BY THE PATIENT

I have been informed to my satisfaction by the attending physician the purpose of the clinical trial and the nature of the drug treatment and follow up including the lab investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give reasons for doing so.

I ,exercising my free power of choice , hereby give my consent to be included as a subject in the clinical trial of **…….**for the treatment of**…….**.

DATE: **SIGNATURE**

NAME

ஒப்புதல் படிவம்

ஆய்வுகுறித்தஅத்தனைதகவல்களையும் நோயாளிஎளிதில் புரிந்துகொள்ளும் வகையில் நோயாளிக்குவிளக்கியுள்ளேன் என்றுஉறுதியளிக்கிறேன்

தேதி: ஆய்வாளரின் கையொப்பம்:

பெயர்:

நோயாளியின் ஒப்புதல்

இந்தஆய்வுகுறித்த முழு தகவல்கள்,மருந்தின் தன்மை,எனதுஉடல் நலன் குறித்தஆய்வுகள்,ஆய்வுக்கானமருத்துவபரிசோதனைகள் மற்றும் சிகிச்சைவிபரங்கள் ஆகியஅனைத்தும் மருத்துவரால் முழுமையாகவிளக்கிக் கூறப்பட்டுள்ளது.

இந்தஆய்விலிருந்துஎந்தநிலையிலும்,எவ்விதகாரணமுமின்றிவிலகிக்கொள்ளஎனக்கு முழு சுதந்திரம் உள்ளதுஎன்பதையும் அறிந்திருக்கிறேன்.

இந்தஆய்வில்,.....ஒருபயனாளியாகஎன்னைஉட்படுத்திக் கொள்ளஏவ்விதமானநிர்பந்தமுமின்றிமுழுமனதுடன் சம்மதிக்கிறேன் என்பதைத் தெரிவித்துக் கொள்கிறேன்.

தேதி: கையொப்பம்:

பெயர்:

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CHENNAI - 106.

ARIGNAR ANNA GOVERNMENT HOSPITAL FOR

INDIAN MEDICINE AND HOMEOPATHY, ARUMBAKKAM,

CHENNAI - 106.

OPEN CLINICAL TRAIL PHASE II B

ANTI MICROBIAL ACTIVITY OF

"ILAVU VER CHOORANAM"

FORM II

1. Centre :
2. Code no : Level of study: OPD/IPD
3. Name of the patient :
4. Address :

5. Age : : sex: Male ☐ Female ☐
6. Educational Status :
7. Occupation :
8. Income :
9. Religion : H ☐ M ☐ CH ☐ S ☐
10. Marital Status :

11. Date of Admission :

12. Date of Discharge :

13Diagnosis :

PERSONAL HISTORY:

11. Food habits : Veg ☐ Non Veg ☐ Veg/Egg ☐
12. Addiction : None ☐ Smoking ☐ Snuff ☐
    Ganja ☐ Alcohol ☐ Opium ☐
13. Sleep : Good ☐ Distributed ☐ Insomnia ☐
14. Presence of anxiety : Yes ☐ No ☐
15. Naadi : Vatham ☐ Pitham ☐ Kapam ☐ Thontham ☐

FAMILY HISTORY:

1. Hypertension : Yes ☐ NO ☐
2. Diabetes mellitus : Yes ☐ NO ☐
3. Tuberculosis : Yes ☐ NO ☐
4. IHD/MI/MS/AS : Yes ☐ NO ☐
5. If any other disease specify : Yes ☐ NO ☐

PRESENTING SYMPTOMS:

		Yes	No	Duration (WEEKS)
1.	Excessive watery discharge	: ☐	☐	_____
2.	Yellowish discharge	: ☐	☐	_____
3.	Muco purulent discharge	: ☐	☐	_____
4.	Foul smell	: ☐	☐	_____
5.	Irritation on genitalia	: ☐	☐	_____
6.	Itching in vulva	: ☐	☐	_____
7.	Lower abdominal pain	: ☐	☐	_____
8.	Low back pain	: ☐	☐	_____
9.	Dysuria	: ☐	☐	_____
10.	Weakness	: ☐	☐	_____
11.	Indigestion	: ☐	☐	_____
12.	Headache	: ☐	☐	_____
13.	If any other disease	: _____		

HISTORY OF PRESENT ILLNESS:

1.	Excessive watery discharge	:
2.	Yellowish discharge	:
3.	Muco purulent discharge	:
4.	Foul smell	:
5.	Irritation on genitalia	:
6.	Itching in vulva	:
7.	Lower abdominal pain	:
8.	Low back pain	:
9.	Dysuria	:
10.	Weakness	:
11.	Indigestion	:
12.	Headache	:
13.	Constipation	
14.	Vertigo	:
15.	Burning micturation	
16.	Weight loss	:
17.	Black patches under the eyes	:
18.	If any other disease	

PAST HISTORY:

1.	Date of diagnosis	: _____			
2.	Duration of disease	: _____			months/years
3.	Source of any infection	: _____			
4.	Gastrointestinal bleeding	: Yes ☐	No ☐	If Yes, when?	_____
5.	Cancer(GI tract)	: Yes ☐	No ☐		
6.	Cancer(other organs)	: Yes ☐	No ☐		
7.	Sedentary life style	: Yes ☐	No ☐		
8.	Achlorhydria	: Yes ☐	No ☐		
9.	Tumours in stomach	: Yes ☐	No ☐		
10.	Tuberculosis (GI tract)	: Yes ☐	No ☐		
11.	Diabetes	: Yes ☐	No ☐		
12.	Nephritis	: Yes ☐	No ☐		
13.	Syphilis	: Yes ☐	No ☐		
14.	AIDS	: Yes ☐	No ☐		
15.	Pt.underwent any surgery	: Yes ☐	No ☐		
16.	UTI	: Yes ☐	No ☐		
17.	Others	: If Yes , Specify	_____		

HISTORY OF PREVIOUS TREATMENT: Yes ☐ No ☐

If yes, give details as follows:

PHYSICAL EXAMINATION:

1. Height (cm) : _____
2. Weight (cm) : _____
3. Pulse : _____
4. Blood pressure : _____
5. Temperature : _____
6. RR : _____ /minute
7. Anaemia : Present ☐ Absent ☐
8. Lymphadenopathy : Present ☐ Absent ☐
9. Pigmentation : Present ☐ Absent ☐

PRESENTING SIGNS:

1. Muco purulent discharge : Present ☐ Absent ☐
2. Foul smell Present ☐ Absent ☐
3. Irritation and itching in vulva : Present ☐ Absent ☐
4. Lower abdominal and backache : Present ☐ Absent ☐
5. Dysuria : Present ☐ Absent ☐
6. Indigestion and constipation : Present ☐ Absent ☐
7. Headache and vertigo : Present ☐ Absent ☐
8. Weakness : Present ☐ Absent ☐
9. Black patches under the eyes : Present ☐ Absent ☐

CLINICAL EVALUATION:

1. Cardio vascular system : Normal ☐ Abnormal ☐ Details _____
2. Respiratory system : Normal ☐ Abnormal ☐ Details _____
3. Central nervous system : Normal ☐ Abnormal ☐ Details _____
4. Urogenital system : Normal ☐ Abnormal ☐ Details _____

SIDDHA PARAMETERS:

1. Naa : Normal ☐ Abnormal ☐ Details _____
2. Niram : Normal ☐ Abnormal ☐ Details _____
3. Mozhi : Normal ☐ Abnormal ☐ Details _____
4. Vizhi : Normal ☐ Abnormal ☐ Details _____
5. Malam : Normal ☐ Abnormal ☐ Details _____
6. Moothiram : Normal ☐ Abnormal ☐ Details _____
7. Sparisam : Normal ☐ Abnormal ☐ Details _____
8. Naadi : Normal ☐ Abnormal ☐ Details _____

RESULT:

1. GOOD : ☐
2. FAIR : ☐
3. POOR : ☐
4. NO RESPONSE : ☐

SIGNATURE OF MEDICAL OFFICER **SIGNATURE OF INVESTIGATOR**

LABORATORY INVESTIGATION AND CLINICAL PARAMETERS

1. Centre : _____
2. Code no : _____ Level of study: OPD/IPD
3. Name of the patient : _____
4. Age : : sex: Male ☐ Female ☐

5. Date and month of assessment : _____

CLINICAL PARAMETERS:

Urine: Albumin, Sugar, Deposits.

MOTION; Ova ,Cyst

HAEMOGRAM :Total WBC Count, RBC, Hb, ESR, Vaginal smear, Culture, USG Abdomen

2. DEPARTMENT OF POST GRATUATE GUNAPADAM BRANCH,

GOVERNMENT SIDDHA MEDICAL COLLEGE,

CHENNAI - 106.

ARIGNAR ANNA GOVERNMENT HOSPITAL FOR

INDIAN MEDICINE AND HOMEOPATHY, ARUMBAKKAM,

CHENNAI - 106.

OPEN CLINICAL TRAIL PHASE II B

ANTI ULCER ACTIVITY OF

"HINGU CHOORANAM"

FORM II

16. Centre :
17. Code no : Level of study: OPD/IPD
18. Name of the patient :
19. Address :

20. Age : : sex: Male ☐ Female ☐
21. Educational Status :
22. Occupation :
23. Income :
24. Religion : H ☐ M ☐ CH ☐ S ☐
25. Marital Status :

11. Date of Admission :

12. Date of Discharge :

13Diagnosis :

PERSONAL HISTORY:

26. Food habits : Veg ☐ Non Veg ☐ Veg/Egg ☐
27. Addiction : None ☐ Smoking ☐ Snuff ☐
Ganja ☐ Alcohol ☐ Opium ☐
28. Sleep : Good ☐ Distributed ☐ Insomnia ☐
29. Presence of anxiety : Yes ☐ No ☐
30. Naadi : Vatham ☐ Pitham ☐ Kapam ☐ Thontham ☐

31. **FAMILY HISTORY:**

6.	Hypertension	: Yes		NO
7.	Diabetes mellitus	: Yes		NO
8.	Tuberculosis	: Yes		NO
9.	IHD/MI/MS/AS	: Yes		NO
10.	If any other disease specify	: Yes		NO

PRESENTING SYMPTOMS:

		Yes	No	Duration (WEEKS)
14.	Pain	:		
15.	Vomiting	:		
16.	Indigestion	:		
17.	Sore tongue	:		
18.	Diarrhoea	:		
19.	Constipation	:		
20.	Haematemesis	:		
21.	Loss of appetite	:		
22.	Thirst	:		
23.	Dysphasia	:		
24.	Flatulence	:		
25.	Heart-burn	:		
26.	If any other disease	:		

HISTORY OF PRESENT ILLNESS:

19.	Pain	:
20.	Vomiting	:
21.	Indigestion	:
22.	Sore tongue	:
23.	Diarrhoea	:
24.	Constipation	:
25.	Haematemesis	:
26.	Loss of appetite	:
27.	Thirst	:
28.	Dysphasia	:
29.	Flatulence	:
30.	Heart-burn	:
31.	Bloating & abdominal fullness	:
32.	Water brash	:
33.	Nausea and copious vomiting:	
34.	Weight loss	:
35.	Melena	:
36.	If any other disease	

PAST HISTORY:

18.	Date of diagnosis	: _____				
19.	Duration of disease	: _____	months/years			
20.	Source of any infection	: _____				
21.	Gastrointestinal bleeding	: Yes		No		If Yes, when? _____
22.	Cancer(GI tract)	: Yes		No		
23.	Cancer(other organs)	: Yes		No		
24.	Sedentary life style	: Yes		No		
25.	Achlorhydria	: Yes		No		
26.	Tumours in stomach	: Yes		No		
27.	Tuberculosis (GI tract)	: Yes		No		
28.	Diabetes	: Yes		No		
29.	Nephritis	: Yes		No		
30.	Syphilis	: Yes		No		
31.	AIDS	: Yes		No		
32.	Pt.underwent any surgery	: Yes		No		

33. UTI : Yes ☐ No ☐
34. Others : If Yes , Specify _____

HISTORY OF PREVIOUS TREATMENT: Yes ☐ No ☐

If yes, give details as follows:

PHYSICAL EXAMINATION:

10. Height (cm) : _____
11. Weight (cm) : _____
12. Pulse : _____
13. Blood pressure : _____
14. Temperature : _____
15. RR : _____ /minute
16. Anaemia : Present ☐ Absent ☐
17. Lymphadenopathy : Present ☐ Absent ☐
18. Pigmentation : Present ☐ Absent ☐

PRESENTING SIGNS:

10. Bloating and abdominal fullness : Present ☐ Absent ☐
11. Water brash (Rush of saliva after an episode of Regurgitation to Dilute the Acid in oesophagus) : Present ☐ Absent ☐
12. Nausea and copious vomiting : Present ☐ Absent ☐
13. Loss of appetite and weight loss : Present ☐ Absent ☐
14. Haematmesis : Present ☐ Absent ☐
15. Melena(tarry, foul-smelling faces due to oxidized iron from Haemoglobin) : Present ☐ Absent ☐
16. Fatigue : Present ☐ Absent ☐
17. Heartburn : Present ☐ Absent ☐
18. Hunger : Present ☐ Absent ☐

CLINICAL EVALUATION:

5. Cardio vascular system : Normal ☐ Abnormal ☐ Details _____
6. Respiratory system : Normal ☐ Abnormal ☐ Details _____
7. Central nervous system : Normal ☐ Abnormal ☐ Details _____
8. Urogenital system : Normal ☐ Abnormal ☐ Details _____

SIDDHA PARAMETERS:

9. Naa : Normal ☐ Abnormal ☐ Details _____
10. Niram : Normal ☐ Abnormal ☐ Details _____
11. Mozhi : Normal ☐ Abnormal ☐ Details _____
12. Vizhi : Normal ☐ Abnormal ☐ Details _____
13. Malam : Normal ☐ Abnormal ☐ Details _____
14. Moothiram : Normal ☐ Abnormal ☐ Details _____
15. Sparisam : Normal ☐ Abnormal ☐ Details _____
16. Naadi : Normal ☐ Abnormal ☐ Details _____

RESULT:

5. GOOD : ☐
6. FAIR : ☐
7. POOR : ☐
8. NO RESPONSE : ☐

SIGNATURE OF MEDICAL OFFICER **SIGNATURE OF INVESTIGATOR**

LABORATORY INVESTIGATION AND CLINICAL PARAMETERS

5. Centre : _____
6. Code no : _____ Level of study: OPD/IPD
7. Name of the patient : _____
8. Age : : sex: Male ☐ Female ☐

5. Date and month of assessment : _____

CLINICAL PARAMETERS:

Urine: Albumin, Sugar, Deposits.

MOTION; Ova ,Cyst

HAEMOGRAM :Total WBC Count, RBC, Hb, ESR, Barium meal,Endoscopy,Ultra sound

VEL'S COLLEGE OF PHARMACY

Approved by the Government of Tamil Nadu
Affiliated to The Tamil Nadu Dr. MGR Medical University

Velan Nagar, P.V. Vaithiyalingam Road, Pallavaram, Chennai - 600 117
Phone : (91-44) 2266 2500 / 01 / 02 / 03 **Fax :** (91-44) 2266 2513
E-mail : velscollege@gmail.com **Web site :** www.velscollege.com

S.No	Title of The Project	Name of The Investigator	Approval status/Remarks	Project Reference
45.	Antiulcer activity of Hir chooranam	Dr. K. Arivumani	Total number of animals proposed was 36 rats and after having discussion it was decided to reduce 11 number of animals and suggested to share the standard group results with other researchers who has planned to carryout similar kind of study. And also to follow OECD 425 method for acute toxicity study.	XIII/VELS/PCOL/ 45/2000/CPCSEA/I AEC/08.08.12
46.	Antihyperlipidemic activity of K mega narayana chenduram in rats	Dr. V. Velpandian	According to the protocol 45 rats were sanctioned. Recommended to proceed with only one model.	XIII/VELS/PCOL/ 46/2000/CPCSEA/I AEC/08.08.12
47.	Antidiabetic activity of Kala me narayana chenduram in rats	Dr. V. Velpandian	45rats were proposed and Sanctioned	XIII/VELS/PCOL/ 47/2000/CPCSEA/I AEC/08.08.12
48.	Using Polaxemer-F-68 as a surfactant in drug loaded nanoparticles for Alzeimers disea	Mr. D. Mohanraj	Total number of animals proposed was 42 rats. But only 30 animals were sanctioned.	XIII/VELS/PCOL/ 48/2000/CPCSEA/I AEC/08.08.12
49.	PLGA-PEG loaded Nanopartic for Alzeimers disease	Mr. C. Tamil Mani	Total number of animals proposed was 42 rats and it was sanctioned.	XIII/VELS/PCOL/ 49/2000/CPCSEA/I AEC/08.08.12

City Centre : No. 521/2, Anna Salai, (Opp. G.R. Complex), Nandanam, Chennai - 600 035.
Phone / Fax: (91-44) 2431 5541 / 2431 5542

Dr. J.ANBU, M.Pharm., Ph.D., D.M.L.T., MBA.
Professor & Head
Department of Pharmacology & Toxicology
School of Pharmaceutical Sciences
Vels University
Pallavaram, Chennai-600 117.

சித்த மருத்துவ மைய ஆராய்ச்சி நிலையம், அரும்பாக்கம், சென்னை - 600 106
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Siddha Central Research Institute
Arignar Anna Govt. Hospital Campus, Arumbakkam, Chennai-600 106
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Ministry of Health & Family Welfare, Govt. of India)
Phone: 044-2621 49 25,
Tele Fax: 044 26214809,
E.mail: crisiddha @ gmail.com
Web: www.crisiddha.tn.nic.in

31.12.2012

Name of the student: Dr. K. Arivumani, Govt Siddha Medical College, Chennai-106

REPORT OF ILAVU VER CHOORANAM

S.No	Parameter	Mean Value
1.	Loss on Drying at 105°C	7.202 %
2.	Total Ash	7.577 %
3.	Acid insoluble Ash	1.026 %
4.	Water Soluble Extractive	9.1 %
5.	Alcohol Soluble Extractive	8.4 %
6.	Particle size	Completely passes through sieve no.44
7.	pH	6.5
Qualitative Phytochemical Tests		
1.	Alkaloids	- ve
2.	Flavonoids	+ ve
3.	Triterpenes	+ ve
4.	Steroids	+ ve
5.	Phenol	+ ve
6.	Tannin	+ ve
7.	Saponin	+ ve
TLC		As Below

After spray with visualizing agent

Sl.No	After Dipping in Vanillin-Sulphuric acid	
	Rf value	Colour of the spot
1	0.04	Purple
2	0.20	Grey
3	0.32	Grey
4	0.39	Grey
5	0.43	Yellow
6	0.47	Grey
7	0.56	Grey
8	0.65	Yellow
11	0.71	Purple
12	0.76	Purple
13	0.84	Green
14	0.89	Pale Blue

Solvent system:

Toluene : Ethyl acetate (4:1.5).

TLC plate:

Aluminium plate precoated with silica gel $60F_{254}$ of 0.2 mm thickness (Merck).

Developing chamber:

Camag's twin trough chamber.

Visualizing reagent:

Vanillin-sulphuric acid reagent.

Extract Preparation:

4 g of the chooranam was soaked overnight in chloroform. Boiled on a water bath for 10 mins, filtered and concentrated to 10 ml.

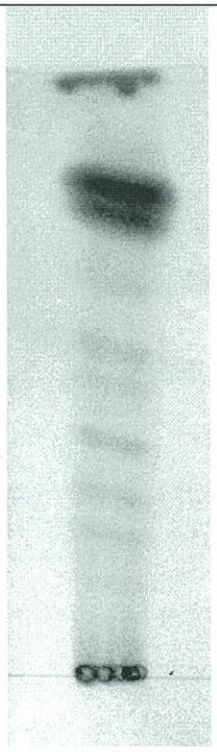
Procedure:

The extract was applied on the TLC using capillary and developed in the solvent system. The developed TLC plate was air dried and photograph was taken in white light. Then dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph taken.

REPORT OF HINGU CHOORANAM

S.No	Parameter	Mean Value
1.	Loss on Drying at 105°C	8.098 %
2.	Total Ash	12.197 %
3.	Acid insoluble Ash	0.89 %
4.	Water Soluble Extractive	33.3 %
5.	Alcohol Soluble Extractive	23.95 %
6.	Particle size	Completely passes through sieve no.44
7.	pH	6.0
Qualitative Phytochemical Tests		
1.	Alkaloids	- ve
2.	Anthraquinone	+ ve
3.	Flavonoids	- ve
4.	Triterpenes	+ ve

5.	Steroids	+ ve
6.	Phenol	+ ve
7.	Tannin	+ ve
8.	Saponin content	- ve
9.	Coumarin	+ ve
10.	Cardiac glycoside	- ve
TLC		As Below



After spray with visualizing agent

Sl.No	After Dipping in Vanillin-Sulphuric acid	
	Rf value	Colour of the spot
1	0.24	Purple
2	0.31	Purple
3	0.40	Purple
4	0.49	Purple
5	0.55	Purple
6	0.65	Purple
8	0.82	Blue

Solvent system:

Toluene : Ethyl acetate (6:1.5).

TLC plate:

Aluminium plate precoated with silica gel $60F_{254}$ of 0.2 mm thickness (Merck).

Developing chamber:

Camag's twin trough chamber.

Visualizing reagent:

Vanillin-sulphuric acid reagent.

Extract Preparation:

4 g of the chooranam was soaked overnight in chloroform. Boiled on a water bath for 10 mins, filtered and concentrated to 10 ml.

Procedure:

The extract was applied on the TLC using capillary and developed in the solvent system. The developed TLC plate was air dried and photograph was taken in white light. Then dipped in vanillin-sulphuric acid reagent, heated in an oven at 105°C until the development of coloured spots and photograph taken.

(R.Shakila)
Research Officer (Chemistry)

(S. Jega Jothi Pandian)
Research Officer (Scientist 2) I/c

சித்த மருத்துவ மைய ஆராய்ச்சி நிலையம்
அரும்பாக்கம், சென்னை - 600 106.
केन्द्रीय सिद्ध अनुसंधान संस्थान,
अरुम्बाक्कम, चेन्नै – 600 106.
SIDDHA CENTRAL RESEARCH INSTITUTE
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(Central Council for Research in Ayurveda and Siddha, New Delhi-110 058
Under Ministry of Health & Family Welfare, Govt. of India)

Ph.Off: **044 2621 49 25**
Tele Fax: **044 26214809**
E.mail crisiddha @ gmail.com
Grams: "AYUSH" CHENNAI

19th July 2012

CERTIFICATE

Certified that the root submitted for identification by Dr. K. Arivumani III year P.G. (Gunapadam), Govt.Siddha Medical College, Chennai – 106, is identified as ***Bombax ceiba*** L. Syn.***B. malabaricum*** DC (Fam. Bombacaceae)

Sasikala Ethirajulu
Asst. Director (Pharmacognosy)

S. Jega Jothi Pandian
Asst.Director Incharge

The Tamil Nadu Dr. M.G.R. Medical University

69, Anna Salai, Guindy, Chennai-600 032

This Certificate is awarded to ~~Mr/Ms~~/Dr.....K. ARIVUMANI.....

for participating as a ~~Resource Person~~ / Delegate in the VII Workshop

on **"Research Methodology & Biostatistics"**

for AYUSH Post-Graduates & Researchers

organized by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University

from 6th Feb. 2012 to 10th Feb. 2012.

DR. MAYILVAHANAN NATARAJAN
M.S.Orth. M.Ch.Orth. (L'pool) Ph.D. (Orth. Onco.) F.R.C.S. (Eng) D.Sc.
7th VICE CHANCELLOR

Dr. R. SRILAKSHMI, DCH, Ph.D.
REGISTRAR

Dr. N. KABILAN, M.D. (Siddha)
READER, DEPT. OF SIDDHA